HNF-EP-0182-133

Waste Tank Summary Report for Month Ending April 30, 1999

B. M. Hanlon
Lockheed Martin Hanford Corp.

Date Published
June 1999

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and Waste Management

FLUOR DANIEL HANFORD, INC.
P.O. Box 1000
Richland, Washington

Hanford Management and Integration Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

RELEASE AUTHORIZATION

Document Number:	HNF-EP-0182-133
Document Title:	WASTE TANK SUMMARY REPORT FOR MONTH ENDING APRIL 30, 1999

This document, reviewed in accordance with DOE Order 241.1, "Scientific and Technical Information Management," and 241.1-1, "Guide to the Management of Scientific and Technical Information," does not contain classified or sensitive unclassified information and is:

APPROVED FOR PUBLIC RELEASE

Mark A. Williams   6/16/99

Lockheed Martin Services, Inc.
Document Control/Information Clearance

Reviewed for Applied Technology, Business Sensitive, Classified, Copyrighted, Export Controlled, Patent, Personal/Private, Proprietary, Protected CRADA, Trademark, Unclassified Controlled Nuclear Information.

APPROVALS

Prepared by: B M Hanlon 5/27/99

B. M. Hanlon Date

Responsible Manager: C DeFigh-Price 6/3/99

C. DeFigh-Price, Manager Date
Process Engineering

This page intentionally left blank.

WASTE TANK SUMMARY REPORT

B. M. Hanlon

ABSTRACT

This report is the official inventory for radioactive waste stored in underground tanks in the 200 Areas at the Hanford Site. Data that depict the status of stored radioactive waste and tank vessel integrity are contained within the report. This report provides data on each of the existing 177 large underground waste storage tanks and 63 smaller miscellaneous underground storage tanks and special surveillance facilities, and supplemental information regarding tank surveillance anomalies and ongoing investigations. This report is intended to meet the requirement of U. S. Department of Energy-Richland Operations Office Order 5820.2A, Chapter I, Section 3.e. (3) (DOE_RL, 1990, Radioactive Waste Management, U. S. Department of Energy-Richland Operations Office, Richland, Washington) requiring the reporting of waste inventories and space utilization for Hanford Tank Farm tanks.

This page intentionally left blank.

CONTENTS

METRIC CONVERSION CHART		
1 inch	=	2.54 centimeters
1 foot	=	30.48 centimeters
1 gallon	=	3.80 liters
1 ton	=	0.90 metric tons
$°F = \left(\frac{9}{5} °C\right) + 32$		
1 Btu/h = 2.930711 E-01 watts (International Table)		

WASTE TANK SUMMARY REPORT
FOR MONTH ENDING APRIL 30, 1999

Note: Changes from the previous month are in bold print.

I. WASTE TANK STATUS

Category	Quantity	Date of Last Change
Double-Shell Tanks[c]	28 double-shell	10/86
Single-Shell Tanks[a]	149 single-shell	1966[d]
Assumed Leaker Tanks	67 single-shell	7/93
Sound Tanks	28 double-shell 82 single-shell	1986 7/93
Interim Stabilized Tanks[b]	119 single-shell	11/97
Not Interim Stabilized[e]	30 single-shell	11/97
Intrusion Prevention Completed	108 single-shell	09/96
Controlled, Clean, and Stable[h]	36 single-shell	09/96
Watch List Tanks[f] Total	22 single-shell 6 double-shell 28 tanks	12/98[g] 6/93

[a] All 149 single-shell tanks were removed from service (i.e., no longer authorized to receive waste) as of November 21, 1980.

[b] Of the 119 tanks classified as Interim Stabilized, 64 are listed as Assumed Leakers. The total of 119 Interim Stabilized tanks includes one tank (B-202) that does not meet current established supernatant and interstitial liquid stabilization criteria. (See Table I-1 footnotes, item #2)

[c] Six double-shell tanks are currently included on the Hydrogen Watch List and are thus prohibited from receiving waste in accordance with "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510.

[d] Last date the single-shell tanks went into service (Tank Farm AX).

[e] Three of these tanks are Assumed Leakers (BY-105, BY-106, SX-104). (See Table H-1)

[f] See Section A tables for more information on Watch List Tanks.

[g] Dates for the Watch List tanks are "officially added to or removed from the Watch List" dates. Eighteen tanks were removed from the Organics Watch List in December 1998; two tanks still remain on this watch list. See Table A-1, Watch List Tanks, for further information.)

[h] The TY tank farm was officially declared Controlled, Clean, and Stable in March 1996. The TX tank farm and BX tank farms were declared CCS in September 1996. (BX-103 has been declared to have met current interim stabilization criteria, and is included in CCS - see also Appendix I).

II. WASTE TANK INVESTIGATIONS

This section includes all single- or double-shell tanks or catch tanks which are showing surface level or interstitial liquid level (ILL) decreases, or drywell radiation level increases in excess of established criteria.

Tank 241-B-111: The interstitial level dropped about 1.5 inches at the end of September 1998 (-3 standard deviations from the baseline which exceeded the criteria established for this tank). The tank has been under investigation as a possible leaker since but the data is inclusive. A small localized gas release would provide the same response, and the expert panel indicated that both a leak and a small gas release were of similar probability as a mechanism for the level drop. The level has not decreased further since October 1998, and the tank now appears stable. Per Plant Review Committee direction, the interstitial level continues to be tracked against a 2 standard deviation criteria versus the baseline and the trend data will be evaluated in two-to-three months.

> Resolution Status: The tank continues to be monitored to collect and evaluate data. See also Off-Normal Occurrence Report (item #9) below.

A. Assumed Leakers or Assumed Re-leakers: (See Appendix C for definition of "Re-leaker")

This section includes all single- or double-shell tanks or catch tanks for which an off-normal or unusual occurrence report has been issued, or for which a waste tank investigation is in progress, for assumed leaks or re-leaks. Tanks/catch tanks will remain on this list until either a) completion of Interim Stabilization, b) the updated occurrence report indicates that the tank/catch tank is not an assumed leaker, or c) the investigation is completed.

There are currently no tanks for which an off-normal or unusual occurrence report has been issued for assumed leaks or re-leaks.

B. Tanks with increases indicating possible intrusions:

This section includes all single-shell tanks and related receiver tanks for which the surveillance data show that the surface level or ILL has met or exceeded the increase criteria, or are still being investigated.

Candidate Intrusion List: Increase criteria in the following tanks indicate possible intrusions. Higher priority safety work on Tank SY-101 has taken precedence over these investigations.

Tank 241-B-202
Tank 241-BX-101
Tank 241-BX-103
Tank 241-BY-103
Tank 241-C-101
Tank 241-U-111

Catch Tank 241-AX-152: The liquid level in this catch tank was steady around 66.75 inches from the startup of Project W-030, Tank Farm Ventilation System," in March 1998 until late August 1998. The level then began to decrease. The October 1998 reading of 65 inches is 1.75 inches below the summer average. This is an active catch tank, routinely pumped, and deviations from baseline are not applicable per OSD-31. The decrease represents a significant change in trend and it is apparent that tank conditions changed around the end of August 1998.

> Resolution Status: Discrepancy Report #98-853 was issued on November 4, 1998. One possible cause under investigation is a change in flow path, causing an increase in evaporation. The tank was pumped down to 2.25 inches on November 13, 1998. Since that time the level has decreased to 0.00 inches. The Discrepancy Report will remain open and catch tank AX-152 will remain on the alert list until an engineering investigation is complete. **A work package was generated to perform an air flow rate assessment in the tank, and install a camera. Tentative completion date is late May 1999.**

III. SURVEILLANCE AND WASTE TANK STATUS HIGHLIGHTS

1. Single-Shell Tanks Saltwell Jet Pumping (See Table E-6 footnotes for further information)

Tank 241-C-106 - Waste removal operations were initiated on November 18, 1998. Commencement of sluicing (sludge removal) began the process of waste removal in the highest heat-generating single-shell storage tank. Wastes from C-106 will be pumped underground through a new specially constructed pipeline to AY-102. The ventilation system for AY-102 is designed for the anticipated heat load of the waste from C-106.

Sluicing of C-106 was conducted on April 23, 28, and 30, 1999. Approximately 9 inches of sludge was removed on these dates, bringing the total sludge removal since the start of sluicing to approximately 34 inches. The peak temperature measured on thermocouple #1 in Riser #14 dropped well below the sluicing control limit of 220°F in response to the decreased sludge thickness and the removal of heat-generating material.

Tank 241-S-102 - The waste was pumped directly to tank SY-102. Pumping was interrupted by the cross-site transfer from April 1 - 8, 1999, and then resumed. In April, 13.0 Kgallons were pumped: 8,994 gallons of dilution water and 229 gallons of water were used for transfer line flushes. A total of 27.8 Kgallons has been pumped from this tank since pumping started in March 1999.

Tank S-102 was not expected to have any supernate, but pumping so far would indicate that there is a large pool of liquid under a floating crust. Both the ENRAF and the LOW located in risers toward the center of the tank have been tracking closely.

Tank 241-S-106 - Pumping restarted on April 15, 1999, after an earlier pumping campaign in the 1980s. The waste was pumped directly to tank SY-102. In April, 26.8 Kgallons were pumped: 115 gallons of water were used for transfer line flushes. A total of 123.8 Kgallons has been pumped from this tank since pumping began in the 1980s.

Tank 241-SX-104 - In April 1999, 6.2 Kgallons were pumped: 12,193 gallons of dilution water and 2,283 gallons of water for transfer line flushes were used. A total of 204.0 Kgallons has been pumped from this tank since pumping started in the late 1980s.

Tank 241-SX-106 - In April 1999, 12.2 Kgallons were pumped: 11,021 gallons of dilution water and 2,081 gallons of water for transfer line flushes were used. A total of 41.3 Kgallons has been pumped from this tank since start of pumping in October 1998.

Tank 241-T-104 - In April 1999, 200 gallons were pumped from this tank; 267 gallons of raw water were used. A total of 147.6 Kgallons has been pumped from this tank since start of pumping in March 1996.

Tank 241-T-110 - In April 1999, 1.8 Kgallons were pumped: 2,586 gallons of raw water were used. A total of 46.1 Kgallons has been pumped from this tank start of pumping in May 1997.

2. Single-Shell Tank TPA Interim Stabilization Milestones

All M-41-xx Milestones are being renegotiated. See also Table I-2, Tri-Party Agreement Single-Shell Tank Interim Stabilization Schedule.

3. Tank Waste Remediation System Safety Initiatives

The U. S. Secretary of Energy has directed that six safety initiatives be implemented in the Tank Waste Remediation System Program to accelerate the mitigation/resolution of the high priority waste tank safety issues at the Hanford Site. Forty-two milestones were established for accomplishing the initiatives.

No Safety Initiatives were completed in April 1999.

The following Safety Initiatives remain to be completed:

SI 4a - Upgrade Alarm Panels in Seven Tank Farms
SI 4c - Complete Accelerated Walk-Downs and Field Verify Essential Drawings

SI 4a - An assessment of the Completion Record is being evaluated for this Safety Initiative. Completion dates for SI 41c have been missed.

4. Double-Shell Tank 241-SY-101 Waste Level Increase

Tank 241-SY-101 exhibited gas release events due to generation and retention of flammable gas. Waste level was used as an indirect measure of retained gas inventory. A mixer pump was installed in the tank in July 1993, which circulates liquid wastes from the tank's upper layer down to the bottom where jet nozzles discharge the fluid about two feet from the bottom. This prevents gas bubbles from building up at the bottom, and results in venting of small steady gas releases, rather than in large infrequent gas releases. Since early 1997, the surface level has been rising in spite of regular mixer pump operations. Investigations continue on why the surface level is rising.

Several void fraction instrument (VFI) readings have been completed which gives the void fraction at depth in the riser through which it is deployed. The VFI readings indicate that the level increase is due to gas trapped in the crust, which comprises the upper approximately 60 inches of waste. The results of the core sampling (of both retained gas sampling and regular cores) and the VFI results, are in agreement.

Resolution Status: On February 11, 1998, the PRC recommended that the DOE-RL declare an Unreviewed Safety Question (USQ) over the continued level growth observed in this tank. DOE has modified the 406-inch and 422-inch mixer pump operational controls to allow additional mixer pump and characterization operations. Tank Farms has implemented TWO Standing Order 99-01 to reflect the relaxation of mixer pump operating controls at 406 and 422 inches. The contractor has established a multi-disciplinary team to solve the level growth issues in SY-101. The prime near-term focus is to transfer approximately 100,000 gallons out of SY-101. The schedule is presently 1st Quarter FY00.

The authorization basis for SY-101 was amended to expedite near-term mitigation activities and establish controls for SY-101 to SY-102 transfer.

A mechanical mixing arm (MMA) will be deployed to disrupt the crust and allow gasses to escape from the liquid. Plans for several deployments of the MMA are underway. Deployment is planned for May 1999.

5. Characterization Progress Status (See Appendix J)

Characterization is the understanding of the Hanford tank waste chemical, physical, and radiological properties to the extent necessary to ensure safe storage and interim operation, and ultimate disposition of the waste.

All of the tanks scheduled for grab sampling in April were sampled. The samples were not shipped to the laboratories for analysis in time for this report. The April data will be included in the May report.

6. Gas Release Events in April 1999

TK #	Start date	Peak Date	End Date	Initial Hydrogen (ppm)	Peak Hydrogen (ppm)	Vent Flow Rate	Volume Hydrogen Release (cfm)
A-101	4/7	4/8	4/10	222	374	6.80	2.03
A-101	4/24	4/25	4/29	211	420	5.60	3.71
AN-104	4/25	4/26	4/28	25	135	26.5	5.08

7. PMHC-TANKFARM-1999-0017, Off-Normal Occurrence Report, "Cross-Site Transfer of tank 241-SY-102 to 241-AP-107 Was Halted Due to Spurious Level Detector Alarms at 6241-A," **Initial Update April 26, 1999**

On March 12, 1999, at 2213 the cross-site transfer of tank 241-SY-102 to 241-AP-107 was halted. One of two sump level detectors in the 6241-A diversion box would spuriously alarm. This alarm would cause the transfer to be shut down.

The diversion box sump was verified empty using a camera. Due to the demonstrated unreliability of the sump level alarm the transfer process was shut down until the leak detector can be repaired and tested. A Limiting Condition for Operations 3.3.3 was entered and the transfer shutdown was verified. An administrative lock was placed on the transfer pump. It was verified that there was no leak present in diversion box 6241-A.

An evaluation of the sump leak detector problems associated with diversion box 6241-A continues.

8. PMHC-TANKFARM-1998-0156, Off-Normal Occurrence Report, "Potential Inadequacy of Authorization Basis (USQ)," **Latest Update April 15, 1999**

On December 31, 1998, the Plant Review Committee (PRC) concluded that a Potential Inadequacy in the Authorization Basis (PIAB) exists.

The Unreviewed Safety Question (USQ) screening results indicate drainage volume from some transfer routes could potentially exceed the assumptions used in the Basis for Interim Operation (BIO) on the volume of liquid that could drain from a pipe in the event of a leak.

Immediate Actions: (1) Stop all waste transfers, (2) Standing Order TWO-99-005 was issued, which describes actions and approvals necessary prior to performing each transfer.

The USQ states: Based on HNF-3612, "Hydraulic Calculations for Cross Site Transfer System and Selected Physically Connected Routes," a larger transfer line drainback of volume than previously analyzed in the Authorization Basis appears to be possible.

During preparation for an upcoming cross-site transfer, piping runs associated with the Cross Site Transfer System were identified that result in larger transfer line drainback volumes than analyzed in the Authorization. The USQ screening determines if the increase in drainback volume represents an analytical error, omission, or deficiency in the authorization basis.

Conclusion: The USQ screening determined that the piping runs available drainback represent a deficiency in the Authorization basis. As other transfer routes (e.g., 244-BX to 241-AP-106) may have piping runs yielding larger drainback volumes than previously analyzed, this PIAB is extended to cover any transfer route. Based on the increased length of pipe leading to larger volume of drainback (i.e., increase the material at risk), a potential deficiency in the Authorization Basis exists that could lead to increased consequences over that previously analyzed for any transfer route.

Per Standing order TWO-99-005, a transfer specific analysis was performed for the pending cross-site transfer (from SY-102 to AP-106). (Note: the transfer was actually made to AP-107; see UOR 0017, item 7 above).

On January 12, 1999, the results of the transfer specific analysis were documented as Unreviewed Safety Question Determination (USQD), USQ Tracking No. TF-99-0017.

The USQD concludes that the proposed activity is within the TWRS Authorization Basis and that the contract has the approval authority to perform the transfer.

Standing Order TWO-99-005 was issued and describes actions and approvals necessary prior to performing each transfer.

This Occurrence Report is extended pending the results of the PRC evaluation of Unreviewed Safety Question Determination for Unreviewed Safety Question No. TF-99-0017 and Unreviewed Safety Question No. TF-98-1237.

A final report is expected to be issued by December 31, 1999.

9. PHMC-TANKFARM-1998-0124, Off-Normal Occurrence Report, "Liquid Observation Well (LOW) Readings in SST 241-B-111 Indicate a Potential Drop in Interstitial Liquid Level (ILL)," Latest Update February 1, 1999.

On September 29, 1998, LOW readings, used to help determine and monitor tank ILLs were in excess of –3 standard deviations from the baseline established for this tank, indicating a liquid level drop of approximately 1.2 inches.

On October 20, 1998, the Plant Review Committee (PRC) recommended:

1) Place the tank on the alert list and continue normal monitoring with increased surveillance and:
   a) if level growth above 2-sigma deviations after 21 days is experienced, file a discrepancy report
   b) if the level trend is downward (2-sigma deviation), file a discrepancy report
   Report data for PRC review and recommendations.

On January 27, 1999, the PRC met and reviewed the data collected since the occurrence report notification date (October 10, 1998). The PRC determined that the data remained inconclusive.

Continuing actions will be to monitor tank B-111 levels closely, and evaluate data collected.

10. PHMC-TANKFARM-1999-0023, "Additional Information Regarding Crust Growth in 241-SY-101," Off-Normal Occurrence Report, Notification Date April 9, 1999, Latest Update April 12, 1999

Characterization of the crust material in SY-101 revealed substantial gas accumulation. If released, the gas could exceed 25% of the Lower Flammability Limit in the tank dome headspace. The level growth was reported in RL-PMHC-TANKFARM-1997-0106. The DOE-HQ Program Manager accepted that final report on June 12, 1998.

It is believed that some globally waste-disturbing activities could induce a gas release from the surface crust. Additional ignition source controls are being placed on the tank until operational controls are in place.

To prevent the possibility of global crust dissolution, waste-disturbing activities are prohibited with the exception of continued prescribed mixer pump operations.

Although the item was previously reported on RL-PMHC-TANKFARM-1997-0106, and no new phenomenon has been identified, LMHC Senior Management believed the occurrence reporting system would make additional information known across the DOE complex.

This report will remain open until the SY-101 crust growth is resolved. Resolution is expected in late CY1999.

APPENDIX A

WASTE TANK SURVEILLANCE MONITORING TABLES

TABLE A-1. WATCH LIST TANKS

April 30, 1999

These tanks have been identified as Watch List Tanks in accordance with Public Law 101-510, Section 3137, "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," (1990). These tanks have been identified because they "... may have a serious potential for release of high-level waste due to uncontrolled increases in temperature or pressure."

Single-Shell Tanks

Tank No.	Watch List	Officially Added to Watch List
A-101	Hydrogen	1/91
AX-101	Hydrogen	1/91
AX-103	Hydrogen	1/91
C-102	Organics	5/94
C-103	Organics	1/91
C-106	High Heat	1/91
S-102	Hydrogen	1/91
S-111	Hydrogen	1/91
S-112	Hydrogen	1/91
SX-101	Hydrogen	1/91
SX-102	Hydrogen	1/91
SX-103	Hydrogen	1/91
SX-104	Hydrogen	1/91
SX-105	Hydrogen	1/91
SX-106	Hydrogen	1/91
SX-109	Hydrogen because other tanks vent thru it	1/91
T-110	Hydrogen	1/91
U-103	Hydrogen	1/91
U-105	Hydrogen	1/91
U-107	Hydrogen	12/93
U-108	Hydrogen	1/91
U-109	Hydrogen	1/91
22 Tanks		

Double-Shell Tanks

Tank No.	Watch List	Officially Added to Watch List
AN-103	Hydrogen	1/91
AN-104	Hydrogen	1/91
AN-105	Hydrogen	1/91
AW-101	Hydrogen	6/93
SY-101	Hydrogen	1/91
SY-103	Hydrogen	1/91
6 Tanks		

TANKS BY WATCH LIST

Hydrogen

A-101
AX-101
AX-103
S-102
S-111
S-112
SX-101
SX-102
SX-103
SX-104
SX-105
SX-106
SX-109
T-110
U-103
U-105
U-107
U-108
U-109
AN-103
AN-104
AN-105
AW-101
SY-101
SY-103
25 Tanks

Organics

C-102
C-103
2 Tanks

High Heat

C-106
1 Tank

22 Single-Shell tanks
6 Double-Shell tanks
28 Tanks on Watch Lists

All tanks were removed from the Ferrocyanide and 18 tanks from Organics Watch Lists; see Table A-2.

TABLE A-2. ADDITIONS/DELETIONS TO WATCH LISTS BY YEAR

April 30, 1999

Added/Deleted dates may differ from dates that tanks were officially added to the Watch Lists. (See Table A-1).

	Ferrocyanide		Hydrogen		Organics		High Heat	Total Tanks (1) SST	DST	Total
1/91 Original List - Response to Public Law 101-5	23		23		8		1	47	5	52
Added 2/91 (revision to Original List)	1	T-107						1		1
Total - December 31, 1991	24		23		8		1	48	5	53
Added 8/92			1	AW-101					1	1
Total - December 31, 1992	24		24		8		1	48	6	54
Added 3/93					1	U-111		1		
Deleted 7/93	-4	(BX-110)						-4		
		(BX-111)								
		(BY-101)								
		(T-101)								
Added 12/93			1	(U-107)				0		
Total - December 31, 1993	20		25		9		1	45	6	51
Added 2/94					1	T-111		1		
Added 5/94					10	A-101		4		
						AX-102				
						C-102				
						S-111				
						SX-103				
						TY-104				
						U-103				
						U-105				
						U-203				
						U-204				
Deleted 11/94	-2	(BX-102)						-2		
		(BX-106)								
Total - December 1994 thru December 1995	18		25		20		1	48	6	54
Deleted 6/96	-4	(C-108)						-4		
		(C-109)								
		(C-111)								
		(C-112)								
Deleted 9/96	-14	(BY-103)						-10		
		(BY-104)								
		(BY-105)								
		(BY-106)								
		(BY-107)								
		(BY-108)								
		(BY-110)								
		(BY-111)								
		(BY-112)								
		(T-107)								
		(TX-118)								
		(TY-101)								
		(TY-103)								
		(TY-104)								
Deleted 12/98					18	(A-101)		-12		
						(AX-102)				
						(B-103)				
						(S-102)				
						(S-111)				
						(SX-103)				
						(SX-106)				
						(T-111)				
						(TX-105)				
						(TX-118)				
						(TY-104)				
						(U-103)				
						(U-105)				
						(U-106)				
						(U-107)				
						(U-111)				
						(U-203)				
						(U-204)				
Total - December 1998 thru April 1999	0		25		2		1	22	6	28

(1) Eighteen of the 20 tanks were removed from the Organics Watch List in December 1998: eight of the tanks removed from the Organics List are also on the Hydrogen Watch List; therefore, the total tanks added/deleted depends upon whether a tank is also on another list.
See table A-1 for current Watch List Tanks.

TABLE A-3. TEMPERATURE MONITORING IN WATCH LIST TANKS (Sheet 1 of 2)

April 30, 1999

All Watch List tanks are reviewed for increasing temperature trends. Temperatures in these tanks are monitored by the Tank Monitor And Control System (TMACS), unless indicated otherwise.

Temperatures are taken in the waste unless in-waste thermocouples are out of service. Temperatures below are the highest temperatures recorded in these tanks during this month, and do not exceed the maximum criteria limit for this month.

Temperatures in Degrees F.

Total Waste in Inches

(Total waste in inches is calculated from Inventory tables and size of tank, not surface level readings)

Hydrogen (Flammable Gas)			Organics		
Tank No.	Temp.	Total Waste	Tank No.	Temp	Total Waste
A-101	148	347	C-102	81	149
AX-101	129	272	C-103	112	66
AX-103	107	40	2 Tanks		
S-102	104	207			
S-111	89	224			
S-112	83	239			
SX-101	132	171			Total
SX-102	142	203	Tank No.	Temp	Waste
SX-103	160	243	C-106 (2)	224	72
SX-104	143	229	1 Tank		
SX-105	166	254			
SX-106	104	201	(Sluicing began November 18,		
SX-109 (1)	137	96	1998, in this tank)		
T-110	63	133			
U-103	85	166			
U-105	89	147			
U-107	78	143			
U-108	87	166			
U-109	83	164			
AN-103	106	348			
AN-104	106	384			
AN-105	104	410			
AW-101	99	410			
SY-101	126	405			
SY-103	95	270			
25 Tanks					

18 tanks have been removed from the Organics Watch List. See Table A-2 for list and dates.
22 Single-Shell Tanks and 6 Double-Shell Tanks remain on the Watch List

TABLE A-3. TEMPERATURE MONITORING IN WATCH LIST TANKS
(sheet 2 of 2)

Notes:

Unreviewed Safety Question(USQ):
When a USQ is declared, special controls are required, and work in the tanks is limited. There are currently no USQs on single-shell tanks. There is a USQ on double-shell tank SY-101 for liquid level increase.

Hydrogen/Flammable Gas:
These tanks are suspected of having a significant potential for hydrogen/flammable gas generation, entrapment, and episodic release. The USQ associated with these tanks was closed in September 1998. Twenty-five tanks (19 SST and 6 DST) remain on the Hydrogen Watch List.

Organic Salts:
These tanks contain concentrations of organic salts ≥3 weight% of total organic carbon (TOC)(equivalent to 10 wt% sodium acetate). The USQ associated with these tanks was closed in October 1998, and 18 organic complexant tanks were removed from the Organic Watch List in December 1998. Two organic solvent tanks (C-102 and C-103) remain on the Organic Watch List.

High Heat:
These tanks contain heat generating strontium-rich sludge and require drainable liquid to be maintained in the tank to promote cooling. Only tank C-106 is on the High Heat Watch List because in the event of a leak, without water additions the tank could exceed temperature limits resulting in unacceptable structural damage. The tank is cooled through evaporation in conjunction with active ventilation. Water is periodically added as evaporation takes place. There is no USQ associated with tank C-106. Sluicing (sludge removal), which is preparatory to pumping this tank, was initiated in November 1998.

Active ventilation:
There are 15 single-shell tanks on active ventilation (eight are on the Watch List as indicated by an asterisk):

C-105	SX-107
C-106 *	SX-108
SX-101 *	SX-109 *
SX-102 *	SX-110
SX-103 *	SX-111
SX-104 *	SX-112
SX-105 *	SX-114
SX-106 *	

Note: A-104, 105 and 106 exhauster has been out of service since 1991 and is no longer considered actively ventilated. Although C-104 has a cascade line with C-105, it is not considered to be actively ventilated.

Footnotes:

(1) Tank SX-109 has the potential for flammable gas accumulation only because other SX tanks vent through it.

(2) Tank C-106 is on the Watch List because in the event of a leak without water additions the tank could exceed temperature limits resulting in unacceptable structural damage.

TABLE A-4. TEMPERATURE MONITORING IN NON-WATCH LIST TANKS

April 30, 1999

SINGLE-SHELL TANKS WITH HIGH HEAT LOADS (>26,000 Btu/hr)

Nine tanks have high heat loads for which temperature surveillance requirements are established by HNF-SD-WM-TSR-006, Rev 0-D, *Tank Waste Remediation System Technical Safety Requirements*, Stickney, 1997. Only one of these tanks (241-C-106) is on the High Heat Watch List. In an analysis, WHC-SD-WM-SARR-010, Rev 1, *Heat Removal Characteristics of Waste Storage Tanks,* Kummerer, 1995, it was estimated that nine tanks have heat sources >26,000 Btu/hr, which is the new parameter for determining high heat load tanks. See also document HNF-SD-WM-BIO-001, Rev 1, *Tank Waste Remediation System Basis for Interim Operation,* Noorani, 1998.

Temperatures in these tanks did not exceed TSR requirements for this month, and are monitored by the Tank Monitor and Control System (TMACS). All high heat load tanks are on active ventilation.

Tank No.	Temperature (F.)		Total Waste In Inches
C-106	224	(Riser 14)	72
	154	(Riser 8)	72
SX-103	160		242
SX-107	163		43
SX-108	181		37
SX-109	137		96
SX-110	159		28
SX-111	181		51
SX-112	144		39
SX-114	176		71
9 Tanks			

(Total Waste In Inches is calculated from inventory table and tank size, not surface level readings)

Notes:
(1) C-106 is on the High Heat Load Watch List. Sluicing began November 18, 1998.
(2) Tanks A-104 and A-105 were deleted from the high heat load list, and SX-103 was added, per the documents above.

SINGLE SHELL TANKS WITH LOW HEAT LOADS (<26,000 Btu/hr)

There are 119 low heat load non-watch list tanks. Temperatures in tanks connected to TMACS are monitored by TMACS; temperatures in those tanks not yet connected to TMACS are manually taken semiannually in January and July. Temperatures obtained were within historical ranges for the applicable tank.

No temperatures have been obtained for several years in the tanks listed below. Most of these tanks have no thermocouple tree.

Tank No.	Tank No.
BX-104	TX-101
BY-102	TX-110
BY-109	TX-114
C-204	TX-116
SX-115	TX-117
T-102	U-104
T-105	

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 1 of 6)

April 30, 1999

The following table indicates whether Single-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month:

NOTE:

All Watch List and High Heat tank temperature monitoring is in compliance. (4)

All Dome Elevation Survey monitoring is in compliance.

All Psychrometrics monitoring is in compliance (2).

Drywell monitoring no longer required (9).

In-tank photos/videos are taken "as needed" (3)

LEGEND:	
(Shaded)	= in compliance with all applicable documentation
N/C	= noncompliance with applicable documentation
O/S	= Out of Service
Neutron	= LOW readings taken by Neutron probe
POP	= Plant Operating Procedure, TO-040-650
MT/FIC/ ENRAF	= Surface level measurement devices
OSD	= Operating Specifications Doc., OSD-T-151-00013, -00031
N/A	= Not applicable (not monitored, or no monitoring schedule)
None	= Applicable equipment not installed

Tank Number	Tank Category		Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD)			LOW Readings (OSD)(5,7)
	Watch List	High Heat			MT	FIC	ENRAF	Neutron
A-101	X			LOW	None	None		
A-102				None	None		None	None
A-103				LOW	None	None		
A-104		X		None	None	None		None
A-105		X		None		None	None	None
A-106				None	None	None		None
AX-101	X			LOW	None	None		(10)
AX-102				None	None	None		None
AX-103	X			None	None	None		None
AX-104				None	None	None		None
B-101				None	None		None	None
B-102				ENRAF	None	None		None
B-103				None	None		None	O/S
B-104				LOW		None	None	
B-105				LOW		None	None	
B-106				FIC	None		None	None
B-107				None		None	None	None
B-108				None	None		None	None
B-109				None		None	None	None
B-110				LOW	O/S	None	None	
B-111				LOW	None		None	
B-112				ENRAF	None	None		None
B-201				MT		None	None	None
B-202				MT		None	None	None
B-203				MT		None	None	None
B-204				MT		None	None	None
BX-101				ENRAF	None	None		None
BX-102				None	None	None		None
BX-103				ENRAF	None	None		None
BX-104			None	ENRAF	None	None		None
BX-105				None	None	None		None
BX-106				ENRAF	None	None		None
BX-107				ENRAF	None	None		None

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS

149 TANKS (Sheet 2 of 6)

Tank Number	Tank Category: Watch List	Tank Category: High Heat	Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD): MT	Surface Level Readings (1) (OSD): FIC	Surface Level Readings (1) (OSD): ENRAF	LOW Readings (OSD)(5,7): Neutron
BX-108				None	None	None		None
BX-109				None	None	None		None
BX-110				None	None	None		None
BX-111				LOW	None	None		
BX-112				ENRAF	None	None		None
BY-101				LOW		None	None	
BY-102			None	LOW	O/S	None	None	
BY-103				LOW	None	None		
BY-104				LOW	O/S	None	None	
BY-105				LOW		None	None	
BY-106				LOW		None	None	
BY-107				LOW		None	None	
BY-108				None		None	None	None
BY-109			None	LOW	None	O/S	None	
BY-110				LOW	None	None		
BY-111				LOW	None	None		
BY-112				LOW		None	None	
C-101				None		None	None	None
C-102				None	None		None	None
C-103				ENRAF	None	None		None
C-104				None	None	None		None
C-105				None	None	None		None
C-106 (3)	X	X		ENRAF	None	None		None
C-107				ENRAF	None	None		None
C-108				None		None	None	None
C-109				None		None	None	None
C-110				MT		None	None	None
C-111				None		None	None	None
C-112				None	None	None		None
C-201				None		None	None	None
C-202				None		None	None	None
C-203				None		None	None	None
C-204			None	None		None	None	None
S-101				ENRAF	None	None		
S-102	X			ENRAF	None	None		
S-103				ENRAF	None	None		
S-104				LOW		None	None	
S-105				LOW	None	None		
S-106				ENRAF	None	None		
S-107				ENRAF	None	None		None
S-108				LOW	None	None		
S-109				LOW	None	None		
S-110				LOW	None	None		
S-111	X			ENRAF	None	None		
S-112	X			LOW	None	None		
SX-101	X			LOW	None	None	(11)	
SX-102	X			LOW	None	None		
SX-103	X			LOW	None	None	(11)	
SX-104	X			LOW	None	None		
SX-105	X			LOW	None	None	(11)	
SX-106	X			ENRAF	None	None		
SX-107		X		None		None	None	None
SX-108		X		None		None	None	None

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 3 of 6)

Tank Number	Tank Category Watch List	Tank Category High Heat	Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD) MT	Surface Level Readings (1) (OSD) FIC	Surface Level Readings (1) (OSD) ENRAF	LOW Readings (OSD)(5,7) Neutron
SX-109 (3)	X	X		None	None	None		None
SX-110		X		None		None	None	None
SX-111		X		None		None	None	None
SX-112		X		None		None	None	None
SX-113				None		None	None	None
SX-114		X		None		None	None	None
SX-115			None	None		None	None	None
T-101				None	None	None		None
T-102			None	ENRAF	None	None		None
T-103				None	None	None		None
T-104				LOW	None	None		
T-105			None	None	None	None		None
T-106				None	None	None		None
T-107				ENRAF	None	None		None
T-108				ENRAF	None	None		None
T-109				None	None	None		None
T-110	X			LOW	None	None		
T-111				LOW	None	None		
T-112				ENRAF	None	None		None
T-201				MT		None	None	None
T-202				MT		None	None	None
T-203				None		None	None	None
T-204				MT		None	None	None
TX-101			None	ENRAF	None	None		None
TX-102				LOW	None	None		
TX-103				None	None	None		None
TX-104				None	None	None		None
TX-105				None	None	None		None (7)
TX-106				LOW	None	None		
TX-107				None	None	None		None
TX-108				None	None	None		None
TX-109				LOW	None	None		
TX-110			None	LOW	None	None		
TX-111				LOW	None	None		
TX-112				LOW	None	None		
TX-113				LOW	None	None	(13)	
TX-114			None	LOW	None	None		
TX-115				LOW	None	None		
TX-116			None	None	None	None		None
TX-117			None	LOW	None	None		
TX-118				LOW	None	None		
TY-101				None	None	None		None
TY-102				ENRAF	None	None		None
TY-103				LOW	None	None		
TY-104				ENRAF	None	None		None
TY-105				None	None	None		None
TY-106				None	None	None		None
U-101				MT		None	None	None
U-102				LOW	None	None		
U-103	X			ENRAF	None	None		
U-104			None	None		None	None	None
U-105	X			ENRAF	None	None		
U-106				ENRAF	None	None		

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS
149 TANKS (Sheet 4 of 6)

Tank Number	Tank Category: Watch List	Tank Category: High Heat	Temperature Readings (4)	Primary Leak Detection Source (5)	Surface Level Readings (1) (OSD): MT	Surface Level Readings (1) (OSD): FIC	Surface Level Readings (1) (OSD): ENRAF	LOW Readings (OSD)(5,7): Neutron
U-107	X			ENRAF	None	None		
U-108	X			LOW	None	None		
U-109	X			ENRAF	None	None		
U-110				None	None	None		None
U-111				LOW	None	None		
U-112				None		None	None	None
U-201				MT		None	None	None
U-202				MT		None	None	None
U-203				None	None	None		None
U-204				ENRAF	None	None		None
Catch Tanks and Special Surveillance Facilities								
A-302-A	N/A	N/A	N/A	(6)	None	None		None
A-302-B	N/A	N/A	N/A	(6)		None	None	None
ER-311	N/A	N/A	N/A	(6)	None		None	None
AX-152	N/A	N/A	N/A	(6)		None	None	None
AZ-151	N/A	N/A	N/A	(6)	None		None	None
AZ-154	N/A	N/A	N/A	(6)		None	None	None
BX-TK/SMP	N/A	N/A	N/A	(6)		None	None	None
A-244 TK/SMP	N/A	N/A	N/A	(6)	None	None.	None	None
AR-204	N/A	N/A	N/A	(6)			None	None
A-417	N/A	N/A	N/A	(6)	None	None	None	None
A-350	N/A	N/A	N/A	(6)	None	None	None	None
CR-003	N/A	N/A	N/A	(6)	None	None	None	None
Vent Sta.	N/A	N/A	N/A	(6)		None	None	None
S-302	N/A	N/A	N/A	(6)	None	None		None
S-302-A	N/A	N/A	N/A	(6)	None		None	None
S-304	N/A	N/A	N/A	(6)	None	None		None
TX-302-B	N/A	N/A	N/A	(6)		None	None	None
TX-302-C	N/A	N/A	N/A	(6)	None	None		None
U-301-B	N/A	N/A	N/A	(6)	None	None		None
UX-302-A	N/A	N/A	N/A	(6)	None	None		None
S-141	N/A	N/A	N/A	(6)	O/S (12)	None	None	None
S-142	N/A	N/A	N/A	(6)	O/S (12)	None	None	None
Totals: 149 tanks	20 Watch List Tanks (4)	10 High Heat Tanks (4)	N/C: 0		N/C: 0	N/C: 0	N/C: 0	N/C: 0

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS -149 TANKS
(Sheet 5 of 6)

Footnotes:

1. All SSTs have either manual tape, FIC, or ENRAF surface level measuring devices. Some also have zip cords.

   ENRAF gauges are being installed to replace FICs (or sometimes manual tapes). The ENRAF gauges are being connected to TMACS, but many are currently being read manually from the field. See Table A-7 for list of ENRAF installations.

2. High heat tanks have active exhausters; psychrometrics can be taken in the high heat tanks. Psychrometric readings are taken on an "as needed" basis with the exception of tanks C-105 and C-106. Hanford Federal Facility Agreement and Consent Order," Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment 1994 (Tri-Party Agreement) requires psychrometric readings to be taken in C-105 and C-106 on a monthly frequency. Tank C-105 exhauster was shut down for C-106 sluicing; but was back on line during parts of December and psychrometrics were performed on C-105 and C-106. Also, SX-farm now has psychrometrics taken monthly.

3. C-106 is the only tank on the high heat load list included on the High Heat Watch List.

4. Temperature readings may be regulated by OSD or POP. Temperatures cannot be obtained in 13 low heat load tanks (see Table A-4). The OSD does not require readings or repair of out-of service thermocouples for the low heat load ($\leq$40,000 Btu/h) tanks. However, the POP requires that attempts are to be made semiannually in January and July to obtain readings for these tanks. There are no in-waste temperatures for tanks AX-102 and B-103. The waste level in this tanks is lower than the lowest thermocouple in these trees.

   Temperatures for many tanks are monitored continuously by TMACS; see Table A-8, TMACS Monitoring Status.

5. Document WHC-OSD-T-151-00031, "Operating Specifications for Tank Farm Leak Detection," Rev C-0, January 13, 1999, requires that single-shell tanks with the surface level measurement device contacting liquid, partial liquid, or floating crust surface, will be monitored for leak detection on a daily basis. Tanks with a solid surface will be monitored for leak detection on a weekly basis by taking neutron scan data from a Liquid Observation Well (LOW), if an LOW is present. Tanks with a solid surface but without LOWs will not be monitored for leak detection if the tank has been interim stabilized, until an LOW is installed. This latest OSD revision does not require drywell surveys to be taken. (Drywell scans are being taken around C-106, as required by the Waste Retrieval Sluicing System, Spectral Gamma Waste Management). The OSD specifies what leak detection methods are to be used for each tank, and the requirements if the readings are not taken on the required frequency or if equipment is out of service.

6. Leak detection for the catch tanks is performed by monitoring for the buildup of liquid in the secondary containment (for most tanks with secondary containment) or for decrease in the liquid level for those tanks without secondary containment or secondary containment monitoring.

   Catch tanks 240-S-302 and 241-S-302-A are monitored for intrusions only, and are not subject to leak detection monitoring requirements until liquid is present above the intrusion level.

   Weight Time Factor is the surface level measuring device currently used in A-417, A-350 and 244-A-Tank/Sump. DCRT CR-003 is inactive and measured in gallons.

TABLE A-5. SINGLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 149 TANKS
(Sheet 6 of 6)

7. Document WHC-SD-WM-TI-605, REV. 0, dated January 1994, describes the rationale for Liquid Observation Well (LOW) installation priority. This priority is based on tank leak status, tank surface condition, and tank stabilization status. Also included is a listing of tanks with the waste level being below two feet which have no priority assigned because no effort will be made to install LOWs in the near future. LOW probes are unable to accurately monitor interstitial liquid levels less than two feet high.

   Tanks which will not receive LOWs:

A-102	BX-101	C-201	T-106
A-104	BX-103	C-202	T-108
A-105	BX-105	C-203	T-109
AX-102	BX-106	C-204	TX-107
AX-104	BX-108	SX-110	TY-102
B-102	C-108	SX-113	TY-104
B-103	C-109	SX-115	TY-106
B-112	C-111	T-102	U-101
		T-103	U-112

   Total - 34 Tanks

8. TX-105 - the LOW was in riser 8; the riser has been removed and the LOW has not been monitored since January 1987. Liquid levels are being taken in riser 9 by ENRAF and recorded in TMACS.

9. OSD-T-151-00031, Rev. C-0, dated January 13, 1999, does not require drywell scans to be taken. Drywell scans are currently being taken around C-106 as a requirement of the Waste Retrieval Sluicing System, Spectral Gamma Waste Management.

10. AX-101 - LOW readings are taken by gamma sensors.

11. SX-101 - ENRAF displacer was sticking to the waste surface and fluctuating again. Now stabilized near the baseline level. LOW is primary device and the ILL readings have been steady.

    SX-103 and SX-105 – ENRAF displacer sticks to waste surface, giving erratic readings. Gauges flushed, recalibrated. **ENRAFs were rebaselined and now maintaining steady level. LOW is primary device and maintaining steady level.**

12. Catch Tanks S-141 and S-142 have no M.T. readings.

13. TX-113 – ENRAF has erratic readings when the gauge loses power and performs an automatic "test gauge" - and may be sitting on a steep slope. **"Test gauges" performed April 7, 1999, and rebaselining had to be done. ENRAF level dropped again to 196.93 inches on April 24th. The tank is following its normal pattern of fluctuation. LOW is primary device and is following normal reading patterns.**

TABLE A-6. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS

28 TANKS (Sheet 1 of 2)

April 30, 1999

The following table indicates whether Double-Shell tank monitoring was in compliance with the requirements as specified in the applicable documents as of the last day of the applicable month.

NOTE:

Dome Elevation Surveys are not required for DSTs.

Psychrometrics and in-tank photos/videos are taken "as needed" (2)

LEGEND:	
(Shaded)	= In compliance with all applicable documentation
N/C	= Noncompliance with applicable documentation
FIC/ENRAF M.T.	= Surface level measurement devices
OSD	= OSD-T-151-0007, OSD-T-151-0031
None	= no M.T., FIC or ENRAF installed
O/S	= Out of Service
W.F.	= Weight Factor
Rad.	= Radiation

Tank Number	Watch List	Temperature Readings (3) (OSD)	Surface Level Readings (1) (OSD)			Radiation Readings		
						Leak Detection Pits (4) (OSD)		Annulus (OSD)
			M.T.	FIC	ENRAF	W.F.	Rad. (8)	
AN-101				None			(8)	
AN-102					None		(8)	
AN-103	X			None			(8)	
AN-104	X		O/S	None			(8)	
AN-105	X		O/S	None			(8)	
AN-106					None		(8)	
AN-107					None	O/S	(8)	
AP-101			O/S		None	O/S (9)	(8)	
AP-102					None	O/S (9)	(8)	
AP-103			O/S		None	O/S (9)	(8)	
AP-104			O/S		None	O/S (9)	(8)	
AP-105					None	O/S (9)	(8)	
AP-106					None	O/S (9)	(8)	
AP-107					None	O/S (9)	(8)	
AP-108					None	O/S (9)	(8)	
AW-101	X		O/S	None			(8)	
AW-102					(6)		(8)	
AW-103				None			(8)	
AW-104				None			(8)	
AW-105				None			(8)	
AW-106				None			(8)	
AY-101				None		O/S	(8)	(5)
AY-102				None			(8)	
AZ-101				None			(8)	(5)
AZ-102					None		(8)	(5)
SY-101	X		O/S	None		(7)	(8)	
SY-102			O/S	None		(7)	(8)	
SY-103	X		O/S	None		(7)	(8)	
Totals: 28 tanks	6 Watch List Tanks	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0	N/C: 0

TABLE A-6. DOUBLE-SHELL TANKS MONITORING COMPLIANCE STATUS - 28 TANKS
(Sheet 2 of 2)

Footnotes:

1. Some double-shell tanks have both FIC and manual tape which is used when the FIC is out of service. Noncompliance (N/C) will be shown when no readings are obtained. ENRAF gauges are being installed to replace FICs. The ENRAF gauges are being connected to TMACS, but some are currently being read manually.

2. Psychrometric readings are taken on an "as needed" basis. No psychrometric readings are currently being taken in the double-shell tanks.

3. OSD specifies double-shell tank temperature limits, gradients, etc.

4. Applicable OSD and HNF-IP-0842, latest revisions, are used as guidelines for monitoring Leak Detection Pits. See also (8) below.

5. AY-101 and AZ-101/102 are monitored only by the annulus Leak Detection Probe Measurement device.

6. AW-102 has ENRAF, FIC and M.T. At some point the FIC will be removed.

7. **SY-101- Leak Detection Pit - CWF reading is above normal range of 24 inches in April 1999.**
   SY-102 - Leak Detection Pit - CWF reading is above normal range of 24 inches in April 1999.
   SY-103 - Leak Detection Pit - CWF reading is above normal range of 24 inches in April 1999.

8. USQ TF-97-0038, dated April 28, 1997, specifies discontinuing the use of leak detection pit radiation monitoring equipment in all double-shell tank farms where the leak detection pits are used as tertiary leak detection. This applies to all double-shell tank farms.

9. Weekly readings are being obtained by Instrument Technicians in these tanks:
   AP-103C (for tanks AP-101 - 104)
   AP-105C (for tanks AP-105 - 108)

TABLE A-7. ENRAF SURFACE LEVEL GAUGE INSTALLATION AND DATA INPUT METHODS

April 30, 1999

LEGEND

SACS = Surveillance Analysis Computer System
TMACS = Tank Monitor and Control System
Auto = Automatically entered into TMACS and electronically transmitted to SACS
Manual = Manually entered directly into SACS by surveillance personnel, from Field Data sheets

EAST AREA

Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method
A-101	09/95	Auto	B-201		
A-102			B-202		
A-103	07/96	Auto	B-203		
A-104	05/96	Manual	B-204		
A-105			BX-101	04/96	Auto
A-106	01/96	Auto	BX-102	06/96	Auto
AN-101	08/96	Auto	BX-103	04/96	Auto
AN-102			BX-104	05/96	Auto
AN-103	08/95	Auto	BX-105	03/96	Auto
AN-104	08/95	Auto	BX-106	07/94	Auto
AN-105	08/95	Auto	BX-107	06/96	Auto
AN-106			BX-108	05/96	Auto
AN-107			BX-109	08/95	Auto
AP-101			BX-110	06/96	Auto
AP-102			BX-111	05/96	Auto
AP-103			BX-112	03/96	Auto
AP-104			BY-101		
AP-105			BY-102		
AP-106			BY-103	12/96	Manual
AP-107			BY-104		
AP-108			BY-105		
AW-101	08/95	Auto	BY-106		
AW-102	05/96	Auto	BY-107		
AW-103	05/96	Auto	BY-108		
AW-104	01/96	Auto	BY-109		
AW-105	06/96	Auto	BY-110	2/97	Manual
AW-106	06/96	Auto	BY-111	2/97	Manual
AX-101	09/95	Auto	BY-112		
AX-102	09/98	Auto	C-101		
AX-103	09/95	Auto	C-102		
AX-104	10/96	Auto	C-103	08/94	Auto
AY-101	03/96	Auto	C-104	4/99	Manual
AY-102	01/98	Auto	C-105	05/96	Manual
AZ-101	08/96	Manual	C-106	02/96	Auto
AZ-102			C-107	04/95	Auto
B-101			C-108		
B-102	02/95	Manual	C-109		
B-103			C-110		
B-104			C-111		
B-105			C-112	03/96	Manual
B-106			C-201		
B-107			C-202		
B-108			C-203		
B-109			C-204		
B-110					
B-111					
B-112	03/95	Manual			

Total East Area: 44

WEST AREA

Tank No.	Installed Date	Input Method	Tank No.	Installed Date	Input Method
S-101	02/95	Manual	TX-101	11/95	Auto
S-102	05/95	Auto	TX-102	05/96	Auto
S-103	05/94	Auto	TX-103	12/95	Auto
S-104			TX-104	03/96	Auto
S-105	07/95	Manual	TX-105	04/96	Auto
S-106	06/94	Auto	TX-106	04/96	Auto
S-107	06/94	Auto	TX-107	04/96	Auto
S-108	07/96	Manual	TX-108	04/96	Auto
S-109	08/95	Manual	TX-109	11/95	Auto
S-110	08/95	Manual	TX-110	05/96	Auto
S-111	08/94	Auto	TX-111	05/96	Auto
S-112	05/95	Auto	TX-112	05/96	Auto
SX-101	04/95	Auto	TX-113	05/96	Auto
SX-102	04/95	Auto	TX-114	05/96	Auto
SX-103	04/95	Auto	TX-115	05/96	Auto
SX-104	05/95	Auto	TX-116	05/96	Auto
SX-105	05/95	Auto	TX-117	06/96	Auto
SX-106	08/94	Auto	TX-118	03/96	Auto
SX-107			TY-101	07/95	Auto
SX-108			TY-102	09/95	Auto
SX-109	09/98	Auto	TY-103	09/95	Auto
SX-110			TY-104	06/95	Auto
SX-111			TY-105	12/95	Auto
SX-112			TY-106	12/95	Auto
SX-113			U-101		
SX-114			U-102	01/96	Manual
SX-115			U-103	07/94	Auto
SY-101	07/94	Auto	U-104		
SY-102	06/94	Manual	U-105	07/94	Auto
SY-103	07/94	Auto	U-106	08/94	Auto
T-101	05/95	Manual	U-107	08/94	Auto
T-102	06/94	Auto	U-108	05/95	Auto
T-103	07/95	Manual	U-109	07/94	Auto
T-104	12/95	Manual	U-110	01/96	Manual
T-105	07/95	Manual	U-111	01/96	Manual
T-106	07/95	Manual	U-112		
T-107	06/94	Auto	U-201		
T-108	10/95	Manual	U-202		
T-109	09/94	Manual	U-203	09/98	Manual
T-110	05/95	Auto	U-204	6/98	Manual
T-111	07/95	Manual			
T-112	09/95	Manual			
T-201					
T-202					
T-203					
T-204					

Total West Area: 69

113 ENRAFs installed: 82 automatically entered into TMACS, 31 manually entered into SACS

TABLE A-8. TANK MONITOR AND CONTROL SYSTEM (TMACS)

April 30, 1999

<u>Note: Indicated below are the number of tanks having at least one operating sensor monitored by TMACS.</u>

Some tanks have more than one sensor: multiple sensors of the same type in a tank are not shown in the table (for example: 10 tanks in BY-Farm have at least one operating TC sensor and 3 tanks in BY Farm have at least one operating RTD sensor).

Acceptance Testing Completed: Sensors Automatically Monitored by TMACS

	Temperatures					
EAST AREA Tank Farm	Thermocouple Tree (TC)	Resistance Thermal Device (RTD)	ENRAF Level Gauge	Pressure (b)	Hydrogen (c)	Gas Sample Flow
A-Farm (6 Tanks)	1		3		1	1
AN-Farm (7 Tanks)	7		4	7	3	3
AP-Farm (8 Tanks)						
AW-Farm (6 Tanks)	6		6		1	1
AX-Farm (4 Tanks)	3		4		1	
AY-Farm (2 Tanks)			2			
AZ-Farm (2 Tanks)						
B-Farm (16 Tanks)	1					
BX-Farm (12 Tanks)	11		12			
BY-Farm (12 Tanks)	10	3				
C-Farm (16 Tanks)	15	1	3	1		
TOTAL EAST AREA (91 Tanks)	54	4	34	8	6	5
WEST AREA						
S-Farm (12 Tanks)	12		6	1	3	3
SX-Farm (15 Tanks)	14		7	1	7	7
SY-Farm (3 Tanks) (a)	3		2	1	2	2
T-Farm (16 Tanks)	14	1	3		1	1
TX-Farm (18 Tanks)	13		18			
TY-Farm (6 Tanks)	6	3	6			
U-Farm (16 Tanks)	15		6	4	6	6
TOTAL WEST AREA (86 Tanks)	81	4	48	7	19	19
TOTALS (177 Tanks)	131	8	82	15	25	24

(a) Tank SY-101 has 2 gas sample flow sensors plus 2 vent flow sensors, and 2 ENRAFs.
(b) Each tank two sensors (high and low range).
(c) Each tank has two sensors (high and low range).

APPENDIX B

DOUBLE SHELL TANK WASTE TYPE AND SPACE ALLOCATION

TABLE B-1. DOUBLE-SHELL TANK WASTE TYPE AND SPACE ALLOCATION

APRIL 1999

DOUBLE-SHELL TANK INVENTORY BY WASTE TYPE

Complexed Waste (AN-102, AN-106, AN-107, SY-101, SY-103, (AY-101 , AP-108 (DC))	3.726 Mgal
Concentrated Phosphate Waste (AP-102)	1.091 Mgal
Double-Shell Slurry and Slurry Feed (AN-103, AN-104, AN-105, AP-101, AW-101, AW-106)	4.396 Mgal
Aging Waste (NCAW) at 5M Na	1.225 Mgal
Dilute in Aging Tanks (AZ-101, AZ-102)	0.382 Mgal
Dilute Waste (1) (AN-101, AP-103, AP-105, AP-104, AP-106, AP-107, AW-102, AW-103, AW-104, AW-105, AY-102, SY-102)	4.275 Mgal
NCRW, PFP and DST Settled Solids (All DST's)	4.108 Mgal
Total Inventory=	19.203 Mgal

SPACE DESIGNATED FOR SPECIFIC USE

Spare Tanks (1 Aging & 1 Non-Aging Waste Tank)	2.28 Mgal
Watch List Tank Space (AN-103, AN-104, AN-105, AW-101, SY-101, SY-103)	0.65 Mgal
Restricted Tank Space (AN-102, AN-107, AP-102, AZ-101, AZ-102	0.43 Mgal
Receiver/Operational Tank Space (AP-106, AP-108, AW-102, AW-106, SY-102)	3.69 Mgal
Total Specific Use Space (04/30/99)	7.04 Mgal

TOTAL DOUBLE-SHELL TANK SPACE

24 Tanks at 1140 Kgal	27.36 Mgal
4 Tanks at 980 Kgal	3.92 Mgal
	31.28 Mgal
Total Available Space	31.28 Mgal
Double-Shell Tank Inventory	19.203 Mgal
Space Designated for Specific Use	7.04 Mgal
Remaining Unallocated Space	5.03 Mgal

WVPTOT

(1) Was reduced in volume by -0.00 Mgal this month (Evaporator WVR)

Note: Net change in total DST inventory since last month: +0.173 Mgal

Table B-2. Double Shell Tank Waste Inventory for April 1999

TANKS	INVENTORY	SOLIDS	TYPE	LEFT
AN-101=	159	33	DN	981
AN-102=	1060	89	CC	80
AN-103=	956	410	DSS	184
AN-104=	1052	449	DSSF	88
AN-105=	1128	489	DSSF	12
AN-106=	39	17	CC	1101
AN-107=	1044	247	CC	96
AP-101=	1114	0	DSSF	26
AP-102=	1091	0	CP	49
AP-103=	24	1	DN	1116
AP-104=	24	0	DN	1116
AP-105=	765	89	DSSF	375
AP-106=	94	0	DN	1046
AP-107=	708	0	DN	432
AP-108=	107	0	DN	1033
AW-101=	1124	306	DSSF	16
AW-102=	1045	40	DN	95
AW-103=	510	348	NCRW	630
AW-104=	1118	231	DN	22
AW-105=	430	280	NCRW	710
AW-106=	579	228	CC	561
AY-101=	162	108	DC	818
AY-102=(*)	509	101	DN	471
AZ-101=	845	47	NCAW	135
AZ-102=	913	104	NCAW	67
SY-101=	1193	41	CC	-53
SY-102=	669	88	DN/PT	471
SY-103=	741	362	CC	399
TOTAL=	19203	4108		12077

NOTE: Solids Adjusted to Most Current Available Data
NOTE: All Volumes in Kilo-Gallons (Kgals)
(*) Preliminary volume, actual volume will be calculated after settling

TOTAL DST SPACE AVAILABLE	
NON-AGING =	27360
AGING =	3920
TOTAL=	31280

DST INVENTORY CHANGE	
03/99 TOTAL	19030
04/99 TOTAL	19203
INCREASE	173

WATCH LIST SPACE	
AN-103=	184
AN-104=	88
AN-105=	12
AW-101=	16
SY-101=	-53
SY-103=	399
TOTAL=	646

RESTRICTED SPACE	
AN-102=	80
AN-107=	96
AP-102=	49
AZ-101=	135
AZ-102=	67
TOTAL=	427

WASTE RECEIVER SPACE	
AP-106 (200E/DN)=	1046
AP-108 (200E/DN)=	1033
SY-102 (200W/DN)=	471
TOTAL=	2550

USABLE SPACE	
AN-101=	981
AN-106=	1101
AP-101=	26
AP-103=	1116
AP-104=	1116
AP-105=	375
AP-107=	432
AW-102=	95
AW-103=	630
AW-104=	22
AW-105=	710
AW-106=	561
AY-101=	818
AY-102=	471
TOTAL=	8454
EVAP. OPERATIONS	-1140
SPARE SPACE	-2280
USABLE LEFT=	5034

USABLE SPACE CHANGE	
03/99 TOTAL SPACE	5595
04/99 TOTAL SPACE	5034
CHANGE=	-561

WASTE RECEIVER SPACE CHANGE	
03/99 TOTAL SPACE	2154
04/99 TOTAL SPACE	2550
CHANGE=	396

Inventory Calculation by Waste Type:

COMPLEXED WASTE	
AN-102=	971 (CC)
AN-106=	22 (CC)
AN-107=	797 (CC)
AW-106=	351 (CC)
AY-101=	54 (DC)
SY-101=	1152 (CC)
SY-103=	379 (CC)
TOTAL DC/CC=	3726
TOTAL SOLIDS=	1092

NCRW SOLIDS (PD)	
AW-103=	348
AW-105=	280
TOTAL=	628

PFP SOLIDS (PT)	
SY-102=	88
TOTAL=	88

CONCENTRATED PHOSPHATE (CP)	
102-AP=	1091
TOTAL=	1091

DILUTE WASTE (DN)	
AN-101=	126
AP-103=	23
AP-104=	24
AP-106=	94
AP-107=	708
AP-108=	107
AW-102=	1005
AW-103=	162
AW-104=	887
AW-105=	150
AY-102=	408
SY-102=	581
TOTAL DN=	4275
TOTAL SOLIDS=	406

NCAW (AGING WASTE) (@ 5M Na)	
AZ-101=	791
AZ-102=	434
TOTAL @ ~5M Na=	1225
TOTAL DN=	382
TOTAL SOLIDS=	151

DSS/DSSF	
AN-103=	546
AN-104=	603
AN-105=	639
AP-101=	1114
AP-105=	676
AW-101=	818
TOTAL DSS/DSSF=	4396
TOTAL SOLIDS=	1743

GRAND TOTALS	
NCRW SOLIDS=	628
DST SOLIDS=	3241
PFP SOLIDS=	88
AGING SOLIDS=	151
CC=	3672
DC=	54
CP=	1091
NCAW=	1607
DSS/DSSF=	4396
DILUTE=	4275
TOTAL=	19203

NOTE: Tank AW-106 (evaporator receiver) has Concentrated Complexed (CC) waste in it and will be transferred to Tank 103-AP.

inv0499

Table B-2. Double Shell Tank Waste Inventory for April 30, 1999

TOTAL AVAILABLE SPACE AS OF APRIL 30, 1999:			12077 KGALS
WATCH LIST TANK SPACE:	**TANK**	**WASTE TYPE**	**AVAILABLE SPACE**
Unusable DST Headspace - Due to Special Restrictions Placed on the Tanks, as Stated in the "Wyden Bill"	AN-103	DSS	184 KGALS
	AN-104	DSSF	88 KGALS
	AN-105	DSSF	12 KGALS
	AW-101	DSSF	16 KGALS
	SY-101	CC	-53 KGALS
	SY-103	CC	399 KGALS
		TOTAL=	646 KGALS
		AVAILABLE TANK SPACE=	12077 KGALS
		MINUS WATCH LIST SPACE=	-646 KGALS
TOTAL AVAILABLE SPACE AFTER WATCH LIST SPACE DEDUCTIONS=			11431 KGALS
RESTRICTED TANK SPACE:	**TANK**	**WASTE TYPE**	**AVAILABLE SPACE**
DST Headspace Available to Store Only Specific Waste Types			
	AN-102	CC	80 KGALS
	AN-107	CC	96 KGALS
	AP-102	CP	49 KGALS
	AZ-101	AW	135 KGALS
	AZ-102	AW	67 KGALS
		TOTAL=	427 KGALS
		AVAILABLE SPACE AFTER WATCH LIST DEDUCTIONS=	11431 KGALS
		MINUS RESTRICED SPACE=	-427 KGALS
TOTAL AVAILABLE SPACE AFTER RESTRICTED SPACE DEDUCTIONS=			11004 KGALS
USABLE/WASTE RECEIVER TANK SPACE:	**TANK**	**WASTE TYPE**	**AVAILABLE SPACE**
DST Headspace Available to Store Facility Generated and Evaporator Product Waste	AN-101	DN	981 KGALS
	AN-106	CC	1101 KGALS
	AP-101	DSSF	26 KGALS
	AP-103	DN	1116 KGALS
	AP-104	DN	1116 KGALS
	AP-105	DSSF	375 KGALS
FACILITY WASTE RECEIVER TANK	AP-106	DN	1046 KGALS
	AP-107	DN	432 KGALS
FACILITY WASTE RECEIVER TANK	AP-108	DN	1033 KGALS
EVAPORATOR FEED TANK	AW-102	DN	95 KGALS
	AW-103	NCRW	630 KGALS
	AW-104	DN	22 KGALS
	AW-105	NCRW	710 KGALS
EVAPORATOR RECEIVER TANK	AW-106	CC	561 KGALS
	AY-101	DC	818 KGALS
	AY-102	DN	471 KGALS
FACILITY WASTE RECEIVER TANK	SY-102	DN	471 KGALS
		TOTAL AVAILABLE USABLE TANK SPACE=	11004 KGALS
EVAPORATOR OPERATIONAL TANK SPACE:			-1140 KGALS
SPARE TANK SPACE: *(DOE Order 5820.2A)*			-2280 KGALS
TOTAL TANK SPACE AVAILABLE AFTER ALL DEDUCTIONS=			7584 KGALS

SEG0499

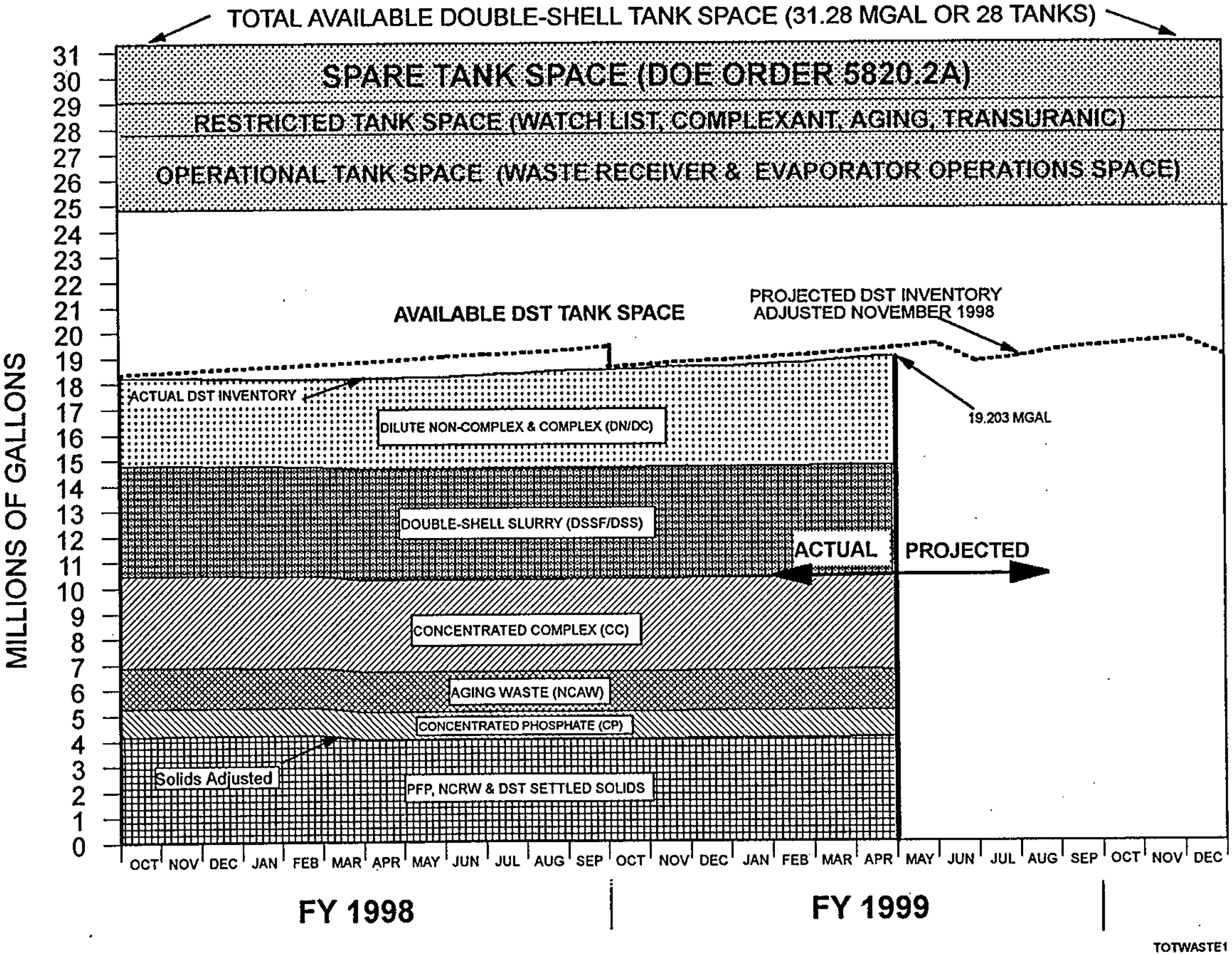


FIGURE B-1. TOTAL DOUBLE-SHELL TANK INVENTORY

This page intentionally left blank

APPENDIX C

TANK AND EQUIPMENT CODE AND STATUS DEFINITIONS

C. TANK AND EQUIPMENT CODE/STATUS DEFINITIONS

April 30, 1999

1. TANK STATUS CODES

WASTE TYPE (also see definitions, section 3)

AGING	Aging Waste (Neutralized Current Acid Waste [NCAW])
CC	Complexant Concentrate Waste
CP	Concentrated Phosphate Waste
DC	Dilute Complexed Waste
DN	Dilute Non-Complexed Waste
DSS	Double-Shell Slurry
DSSF	Double-Shell Slurry Feed
NCPLX	Non-Complexed Waste
PD/PN	Plutonium-Uranium Extraction (PUREX) Neutralized Cladding Removal Waste (NCRW), transuranic waste (TRU)
PT	Plutonium Finishing Plant (PFP) TRU Solids

TANK USE (DOUBLE-SHELL TANKS ONLY)

CWHT	Concentrated Waste Holding Tank
DRCVR	Dilute Receiver Tank
EVFD	Evaporate Feed Tank
SRCVR	Slurry Receiver Tank

2. SOLID AND LIQUID VOLUME DETERMINATION METHODS

F	Food Instrument Company (FIC) Automatic Surface Level Gauge
E	ENRAF Surface Level Gauge (being installed to replace FICs)
M	Manual Tape Surface Level Gauge
P	Photo Evaluation
S	Sludge Level Measurement Device

3. DEFINITIONS

WASTE TANKS - GENERAL

Waste Tank Safety Issue

A potentially unsafe condition in the handling of waste material in underground storage tanks that requires corrective action to reduce or eliminate the unsafe condition.

Watch List Tank

An underground storage tank containing waste that requires special safety precautions because it may have a serious potential for release of high level radioactive waste because of uncontrolled increases in temperature or pressure. Special restrictions have been placed on these tanks by "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the *National Defense Authorization Act for Fiscal Year 1991*, November 5, 1990, Public Law 101-510, (also known as the Wyden Amendment).

Characterization

Characterization is understanding the Hanford tank waste chemical, physical, and radiological properties to the extent necessary to insure safe storage and interim operation, and ultimate disposition of the waste.

WASTE TYPES

Aging Waste (AGING)
High level, first cycle solvent extraction waste from the PUREX plant (NCAW)

Concentrated Complexant (CC)
Concentrated product from the evaporation of dilute complexed waste.

Concentrated Phosphate Waste (CP)
Waste originating from the decontamination of the N Reactor in the 100 N Area. Concentration of this waste produces concentrated phosphate waste.

Dilute Complexed Waste (DC)
Characterized by a high content of organic carbon including organic complexants: ethylenediaminetetra-acetic acid (EDTA), citric acid, and hydroxyethyl-ethylenediaminetriacetic acid (HEDTA), being the major complexants used. Main sources of DC waste in the DST system are saltwell liquid inventory (from SSTs).

Dilute Non-Complexed Waste (DN)
Low activity liquid waste originating from T and S Plants, the 300 and 400 Areas, PUREX facility (decladding supernatant and miscellaneous wastes), 100 N Area (sulfate waste), B Plant, saltwells, and PFP (supernate).

Double-Shell Slurry (DSS)
Waste that exceeds the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. For reporting purposes, DSS is considered a solid.

Double-Shell Slurry Feed (DSSF)
Waste concentrated just before reaching the sodium aluminate saturation boundary in the evaporator without exceeding receiver tank composition limits. This form is not as concentrated as DSS.

Non-complexed (NCPLX)
General waste term applied to all Hanford Site (NCPLX) liquors not identified as complexed.

PUREX Decladding (PD)
PUREX Neutralized Cladding Removal Waste (NCRW) is the solids portion of the PUREX plant neutralized cladding removal waste stream; received in Tank Farms as a slurry. NCRW solids are classified as transuranic (TRU) waste.

PFP TRU Solids (PT)
TRU solids fraction from PFP Plant operations.

Drainable Interstitial Liquid (DIL)
Interstitial liquid that is not held in place by capillary forces, and will therefore migrate or move by gravity. (See also Section 4)

Supernate
The liquid above the solids in waste storage tanks. (See also Section 4)

Ferrocyanide
A compound of iron and cyanide commonly expressed as FeCN. The actual formula for the ferrocyanide anion is $[Fe(CN)_6]^{-4}$.

INTERIM STABILIZATION (Single-Shell Tanks only)

Interim Stabilized (IS)

A tank which contains less than 50 Kgallons of drainable interstitial liquid and less than 5 Kgallons of supernatant liquid. If the tank was jet pumped to achieve interim stabilization, then the jet pump flow must also have been at or below 0.05 gpm before interim stabilization criteria is met.

Jet Pump

The jet pump system includes 1) a jet assembly with foot valve mounted to the base of two pipes that extend from the top of the well to near the bottom of the well casing inside the saltwell screen, 2) a centrifugal pump to supply power fluid to the down-hole jet assembly, 3) flexible or rigid transfer jumpers, 4) a flush line, and 5) a flowmeter. The jumpers contain piping, valves, and pressure and limit switches.

The centrifugal pump and jet assembly are needed to pump the interstitial liquid from the saltwell screen into the pump pit, nominally a 40-foot elevation rise. The power fluid passes through a nozzle in the jet assembly and acts to convert fluid pressure head to velocity head, thereby reducing the pressure in the jet assembly chamber. The reduction in pressure allows the interstitial liquid to enter the jet assembly chamber and mix with the power fluid. Velocity head is converted to pressure head above the nozzle, lifting power fluid, and interstitial liquid to the pump pit. Pumping rates vary from 0.05 gallons to about 4 gpm.

Saltwell Screen

The saltwell system is a 10-inch diameter saltwell casing consisting of a stainless steel saltwell screen welded to a Schedule 40 carbon steel pipe. The casing and screen are to be inserted into the 12-inch tank riser located in the pump pit. The stainless steel screen portion of the system will extend through the tank waste to near the bottom of the tank. The saltwell screen portion of the casing is an approximately 10-foot length of 300 Series, 10-inch diameter, stainless steel pipe with screen openings (slots) of 0.05 inches.

Emergency Pumping Trailer

A 45-foot tractor-type trailer is equipped to provide storage space and service facilities for emergency pumping equipment: this consists of two dedicated jet pump jumpers and two jet pumps, piping and dip tubes for each, two submersible pumps and attached piping, and a skid-mounted Weight Factor Instrument Enclosure (WFIE) with an air compressor and electronic recording instruments. The skid also contains a power control station for the pumps, pump pit leak detection, and instrumentation. A rack for over 100 feet of overground double-contained piping is also in the trailer.

INTRUSION PREVENTION (ISOLATION) Single-Shell Tanks only

Partially Interim Isolated (PI)

The administrative designation reflecting the completion of the physical effort required for Interim Isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization.

Interim Isolated (II)

The administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. In June 1993, Interim Isolation was replaced by Intrusion Prevention.

Intrusion Prevention (IP)

Intrusion Prevention is the administrative designation reflecting the completion of the physical effort required to minimize the addition of liquids into an inactive storage tank, process vault, sump, catch tank, or diversion box. Under no circumstances are electrical or instrumentation devices disconnected or disabled during the intrusion prevention process (with the exception of the electrical pump).

Controlled, Clean, and Stable (CCS)

Controlled, Clean, and Stable reflects the completion of several objectives: "Controlled" - provide remote monitoring for required instrumentation and implement controls required in the TWRS Authorization Basis; "Clean" - remove surface soil contamination and downpost the Tank Farms to RBA/URMA/RA radiological control status, remove abandoned equipment, and place reusuable equipment in compliant storage; and "Stable" - remove pumpable liquids from the SSTs and IMUSTs and isolate the tanks.

TANK INTEGRITY

Sound

The integrity classification of a waste storage tank for which surveillance data indicate no loss of liquid attributed to a breach of integrity.

Assumed Leaker

The integrity classification of a waste storage tank for which surveillance data indicate a loss of liquid attributed to a breach of integrity.

Assumed Re-Leaker

A condition that exists after a tank has been declared as an "assumed leaker" and then the surveillance data indicates a new loss of liquid attributed to a breach of integrity.

TANK INVESTIGATION

Intrusion

A term used to describe the infiltration of liquid into a waste tank.

SURVEILLANCE INSTRUMENTATION

Drywells

Drywells are vertical boreholes with 6-inch (internal diameter) carbon steel casings positioned radially around SSTs. These wells range between 50 and 250 feet in depth, and are monitored between the range of 50 to 150 feet. The wells are sealed when not in use. They are called drywells because they do not penetrate to the water table and are therefore usually "dry." There are 759 drywells.

Monitoring is done by gamma radiation or neutron-moisture sensors to obtain scan profiles of radiation or moisture in the soil as a function of well depth, which could be indicative of tank leakage.

Two single-shell tanks (C-105 and C-106) are currently monitored monthly by gamma radiation sensors. The remaining drywells are monitored on request by gamma radiation sensors. Monitoring by neutron-moisture sensors is done only on request.

Laterals

Laterals are horizontal drywells positioned under single-shell waste storage tanks to detect radionuclides in the soil which could be indicative of tank leakage. These drywells can be monitored by radiation detection probes. Laterals are 4-inch inside diameter steel pipes located 8 to 10 feet below the tank's concrete base. There are three laterals per tank. Laterals are located only in A and SX farms. There are currently no functioning laterals and no plan to prepare them for use.

Surface Levels

The surface level measurements in all waste storage tanks are monitored by manual or automatic conductivity probes, and recorded and transmitted or entered into the Surveillance Analysis Computer System (SACS).

Automatic FIC

An automatic waste surface level measurement device is manufactured by the Food Instrument Company (FIC). The instrument consists of a conductivity electrode (plummet) connected to a calibrated steel tape, a steel tape reel housing and a controller that automatically raises and lowers the plummet to obtain a waste surface level reading. The controller can provide a digital display of the data and until February 1999, the majority of the FICs transmitted readings to the CASS. Since CASS retirement, all FIC gauges are read manually. FICs are being replaced by ENRAF detectors (see below).

ENRAF 854 ATG Level Detector

FICs and some manual tapes are in the process of being replaced by the ENRAF ATG 854 level detector. The ENRAF gauge, fabricated by ENRAF Incorporated, determines waste level by detecting variations in the weight of a displacer suspended in the tank waste. The displacer is connected to a wire wound onto a precision measuring drum. A level causes a change in the weight of the displacer which will be detected by the force transducer. Electronics within the gauge causes the servo motor to adjust the position of the displacer and compute the tank level based on the new position of the displacer drum. The gauge displays the level in decimal inches. The first few ENRAFs that received remote reading capability transmit liquid level data via analog output to the Tank Monitor and Control System (TMACS). The remaining ENRAFs and future installations will transmit digital level data to TMACS via an ENRAF Computer Interface Unit (CIU). The CIU allows fully remote communication with the gauge, minimizing tank farm entry.

Annulus

The annulus is the space between the inner and outer shells on DSTs only. Drain channels in the insulating and/or supporting concrete carry any leakage to the annulus space where conductivity probes are installed. The annulus conductivity probes and radiation detectors are the primary means of leak detection for all DSTs.

Liquid Observation Well (LOW)

In-tank liquid observation wells are used for monitoring the interstitial liquid level (ILL) in single-shell waste storage tanks. The wells are usually constructed of fiberglass or TEFZEL-reinforced epoxy-polyester resin (TEFZEL, a trademark of E. I. du Pont de Nemours & Company). There are a few LOWs constructed of steel. LOWs are sized to extend to within 1 inch of the bottom of the waste tank, are sealed at their bottom ends and have a nominal outside diameter of 3.5 inches. Two probes are used to monitor changes in the ILL; gamma and neutron, which can indicate intrusions or leakage by increases or decreases in the ILL. There are 65 LOWs (64 are in operation) installed in SSTs that contain or are capable of containing greater than 50 Kgallons of drainable interstitial liquid, and in two DSTs only. The LOWs installed in two DSTs, (SY-102 and AW-103 tanks), are used for special, rather than routine, surveillance purposes only.

Thermocouple (TC)

A thermocouple is a thermoelectric device used to measure temperature. More than one thermocouple on a device (probe) is called a thermocouple tree. In DSTs there may be one or more thermocouple trees in risers in the primary tank. In addition, in DSTs only, there are thermocouple elements installed in the insulating concrete, the lower primary tank knuckle, the secondary tank concrete foundation, and in the outer structural concrete.

These monitor temperature gradients within the concrete walls, bottom of the tank, and the domes. In SSTs, one or more thermocouples may be installed directly in a tank, although some SSTs do not have any trees installed. A single thermocouple (probe) may be installed in a riser, or lowered down an existing riser or LOW. There are also four thermocouple laterals beneath Tank 105-A in which temperature readings are taken in 34 thermocouples.

In-tank Photographs and Videos

In-tank photographs and videos may be taken to aid in resolving in-tank measurement anomalies and determine tank integrity. Photographs and videos help determine sludge and liquid levels by visual examination.

TERMS/ACRONYMS

CASS — Computer Automated Surveillance System - this system was retired in February 1999

CCS — Controlled, Clean and Stable (tank farms)

II — Interim Isolated

IP — Intrusion Prevention Completed

IS — Interim Stabilized

MT/FIC/ENRAF — Manual Tape, Food Instrument Corporation, ENRAF Corporation (surface level measurement devices)

OSD — Operating Specifications Document

PI — Partial Interim Isolated

SAR — Safety Analysis Reports

SHMS — Standard Hydrogen Monitoring System

TMACS — Tank Monitor and Control System

TPA — Hanford Federal Facility Consent and Compliance Order, "Washington State Department of Ecology, U. S. Environmental Protection Agency, and U. S. Department of Energy," Fourth Amendment, 1994 (Tri-Party Agreement)

USQ — Unreviewed Safety Question

Wyden Amendment — "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," Section 3137 of the National Defense Authorization Act for Fiscal Year 1991, November 5, 1990, Public Law 101- 510.

4. INVENTORY AND STATUS BY TANK – COLUMN VOLUME CALCULATIONS AND DEFINITIONS FOR TABLE E-6 (SINGLE-SHELL TANKS)

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Total Waste	Solids volume plus Supernatant liquid. Solids include sludge and saltcake (see definitions below)
Supernate Liquid	Drainable Liquid Remaining minus Drainable Interstitial. Supernate is the liquid floating on the surface of the waste. Supernate is usually derived by subtracting the solids level measurement from the liquid level measurement. In some cases, the supernatant volume includes floating solid crusts because their volume cannot be measured. In-tank photographs or videos are useful in estimating the liquid volumes; the area of solids covered and the average depth can be estimated.
Drainable Interstitial Liquid	Drainable Liquid Remaining minus Supernate. Drainable interstitial liquid is calculated based on the saltcake and sludge volumes, using calculated porosity values from past pumping or actual data for each tank, when available. Interstitial liquid is liquid that fills the interstitial spaces of the solids waste. Drainable interstitial liquid is calculated based on the saltcake and sludge volumes in the tank. The sum of the interstitial liquid contained in saltcake and sludge is the initial volume of drainable interstitial liquid. The volume reported as Drainable Interstitial Liquid is the initial volume of drainable interstitial liquid minus interstitial liquid removed by pumping.

COLUMN HEADING	COLUMN VOLUME CALCULATIONS (Underlined)/DEFINITIONS
Pumped This Month	Net total gallons of liquid pumped from the tank during the month. If supernate is present, pump production is first subtracted from the supernatant volume. The remainder is then subtracted from the drainable interstitial liquid volume. The total pumped volume is subtracted from drainable liquid remaining and pumpable liquid remaining. Pump production takes into account the amount of water added to the tank during the month (if any).
Total Pumped	Cumulative net total gallons of liquid pumped from 1979 to date.
Drainable Liquid Remaining	Supernate plus Drainable Interstitial. (See Supernatant Liquid and Drainable Interstitial Liquid above for definitions). The total Drainable Liquid Remaining is the sum of drainable interstitial liquid and supernate minus total gallons pumped.
Pumpable Liquid Remaining	Drainable Liquid Remaining minus undrainable heel volume. (Dish bottom tanks have a "heel" where liquids can collect: flat bottom tanks do not). (See Drainable Liquid Remaining and Pumped this Month for definitions). Not all drainable interstitial liquid is pumpable. It is assumed that drainable interstitial liquid on top of the undrainable heel in sludge or saltcake, is not jet pumpable. Therefore, pumpable interstitial liquid is the initial volume of drainable interstitial liquid minus the amount of interstitial liquid on top of the heel. The volume shown as Pumpable Liquid Remaining is the sum of pumpable interstitial liquid and supernate minus total gallons pumped.
Sludge	Solids formed during sodium hydroxide additions to waste. Sludge usually was in the form of suspended solids when the waste was originally received in the tank from the waste generator. In-tank photographs or videos may be used to estimate the volume.
Saltcake	Results from crystallization and precipitation after concentration of liquid waste, usually in an evaporator. If saltcake is layered over sludge, it is only possible to measure total solids volume. In-tank photographs or videos may be used to estimate the saltcake volume.
Solids Volume Update	Indicates the latest update of any change in the solids volume.
Solids Update Source - See Footnote	Indicates the source or basis of the latest solids volume update.
Last In-tank Photo	Date of last in-tank photographs taken.
Last In-tank Video	Date of last in-tank video taken.
See Footnotes for These Changes	Indicates any change made the previous month. A footnote explanation for the change follows the Inventory and Status by Tank section (Table E-6).

APPENDIX D

TANK FARM CONFIGURATION, STATUS, AND FACILITIES CHARTS

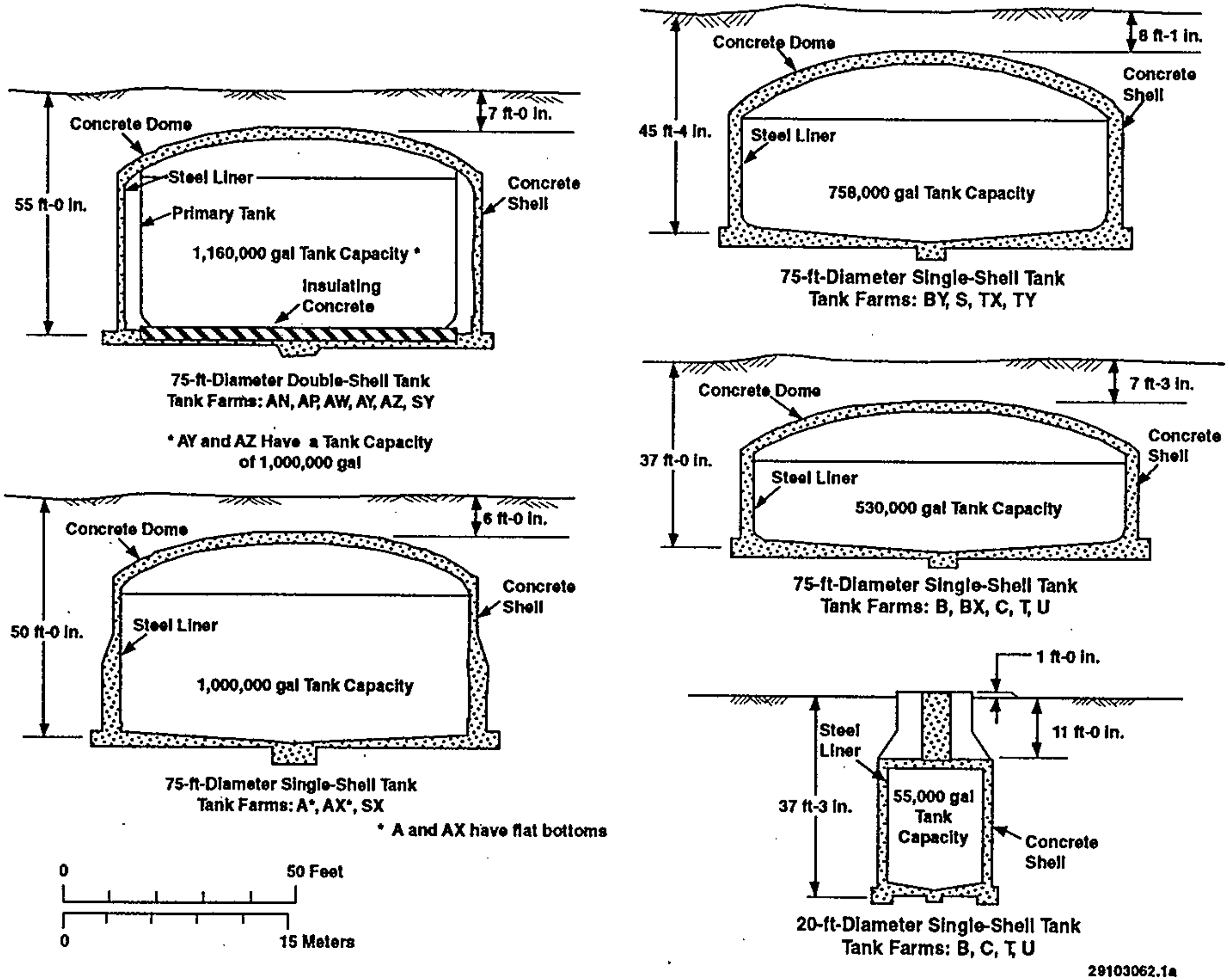


FIGURE D-1. HIGH-LEVEL WASTE TANK CONFIGURATION

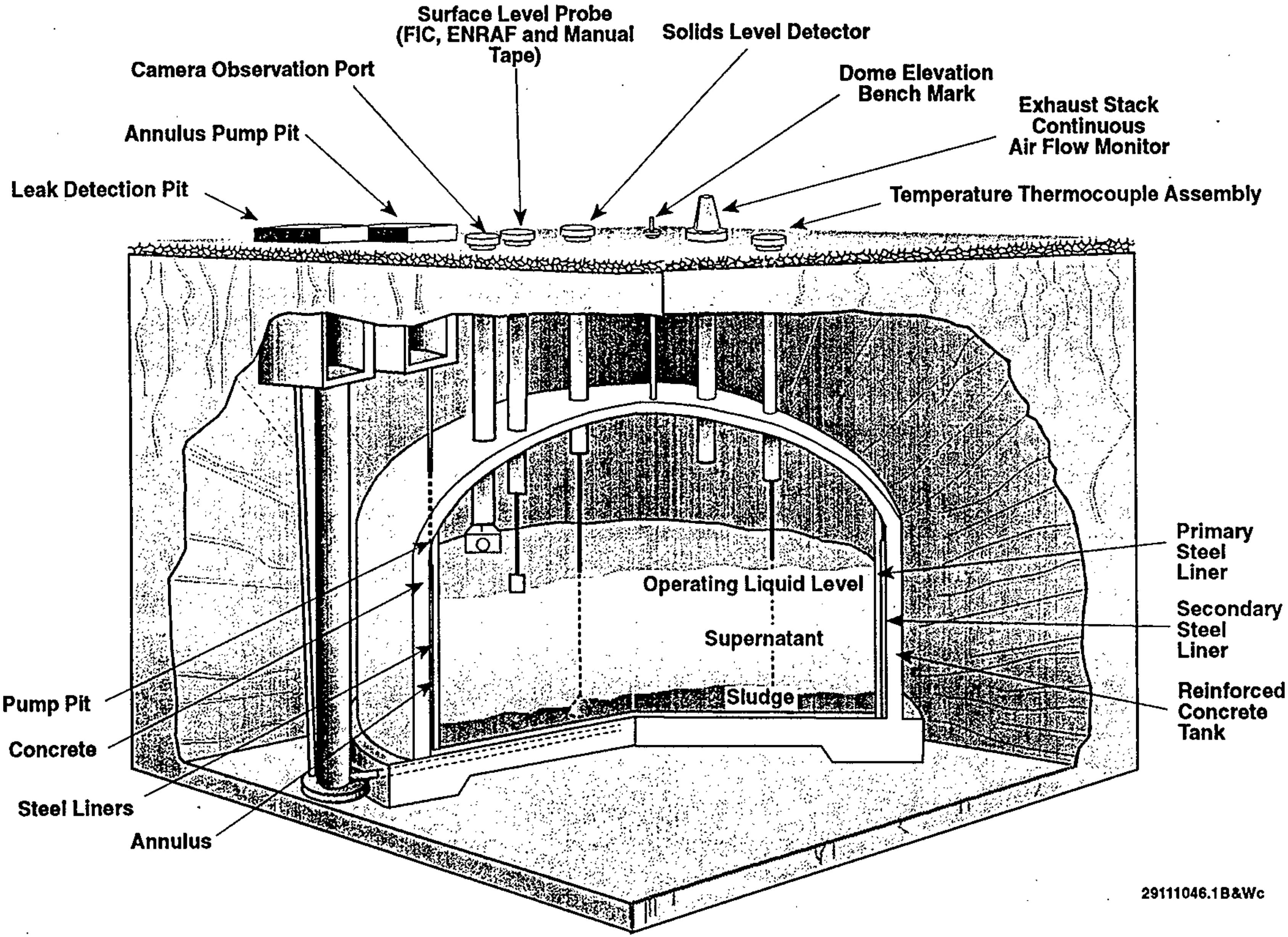


FIGURE D-2. DOUBLE-SHELL TANK INSTRUMENTATION CONFIGURATION

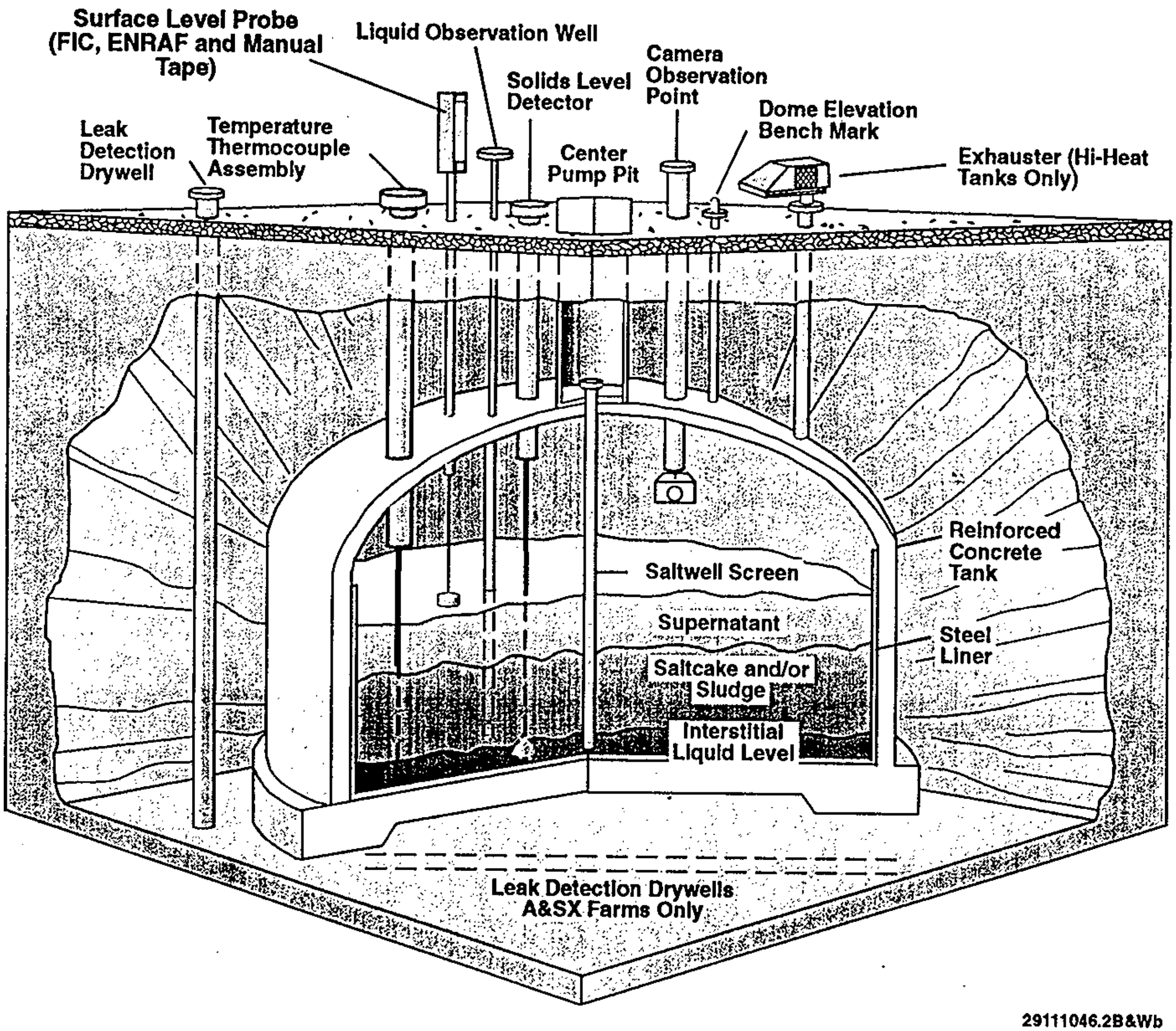


FIGURE D-3. SINGLE-SHELL TANK INSTRUMENTATION CONFIGURATION

THE HANFORD TANK FARM FACILITIES CHARTS (colored foldouts)

ARE ONLY BEING INCLUDED IN THIS REPORT ON A QUARTERLY BASIS

(i.e., months ending March 31, June 30, September 30, December 31)

NOTE: COPIES OF THE FACILITIES CHARTS CAN BE OBTAINED

FROM DENNIS BRUNSON, MULTI-MEDIA SERVICES

376-2345, G3-51

ALMOST ANY SIZE IS AVAILABLE, AND CAN BE LAMINATED

P-Card required

This page intentionally left blank

APPENDIX E

MONTHLY SUMMARY
TANK USE SUMMARY
PUMPING RECORD, LIQUID STATUS AND PUMPABLE LIQUID REMAINING IN TANK FARMS
INVENTORY SUMMARY BY TANK FARM
INVENTORY AND STATUS BY TANK

TABLE E-1. MONTHLY SUMMARY
TANK STATUS
April 30, 1999

	200 EAST AREA	200 WEST AREA	TOTAL	
IN SERVICE	25	03	28	(1)
OUT OF SERVICE	66	83	149	
SOUND	59	51	110	
ASSUMED LEAKER	32	35	67	
INTERIM STABILIZED	60	59	119	(2)
ISOLATED				
PARTIAL INTERIM	11	30	41	
INTRUSION PREVENTION COMPLETE	55	53	108	
CONTROLLED, CLEAN, AND STABLE	12	24	36	

WASTE VOLUMES (Kgallons)

		200 EAST AREA	200 WEST AREA	1600.00 TOTAL	SST TANKS	DST TANKS	TOTAL
SUPERNATANT							
AGING	Aging waste	1607	0	1607	0	1607	1607
CC	Complexant concentrate waste	2144	1527	3671	3	3668	3671
CP	Concentrated phosphate waste	1091	0	1091	0	1091	1091
DC	Dilute complexed waste	1167	0	1167	1	1166	1167
DN	Dilute non-complexed waste	2270	0	2270	0	2270	2270
DN/PD	Dilute non-complex/PUREX TRU solid	312	0	312	0	312	312
DN/PT	Dilute non-complex/PFP TRU solids	0	581	581	0	581	581
NCPLX	Non-complexed waste	160	430	590	590	0	590
DSSF	Double-shell slurry feed	5299	48	5347	951	4396	5347
TOTAL SUPERNATANT		14050	2586	16636	1545	15091	16636
SOLIDS							
Double-shell slurry		410	0	410	0	410	410
Sludge		9413	6237	15650	12027	3623	15650
Saltcake		5188	16390	21578	21499	79	21578
TOTAL SOLIDS		15011	22627	37638	33526	4112	37638
TOTAL WASTE		29061	25213	54274	35071	19203	54274
AVAILABLE SPACE IN TANKS		11260	870	12130	0	12130	12130
DRAINABLE INTERSTITIAL		1892	4540	6432	6146	286	6432
DRAINABLE LIQUID REMAINING		15893	7150	23043	7666	15377	23043

(1) Includes six double-shell tanks on Hydrogen Watch List not currently allowed to receive waste, AN-103, AN-104, AN-105, AW-101, SY-101, and SY-103.
(2) Includes one tank (B-202) which does not meet current established supernatant and interstitial liquid stabilization criteria.

TABLE E-2. TANK USE SUMMARY

April 30, 1999

TANK FARMS	TANKS AVAILABLE TO RECEIVE WASTE TRANSERS		SOUND	ASSUMED LEAKER	ISOLATED TANKS: PARTIAL INTERIM	ISOLATED TANKS: INTRUSION PREVENTION COMPLETED	ISOLATED TANKS: CONTROLLED CLEAN, AND STABLE	INTERIM TABILIZED TANKS	
EAST									
A	0		3	3	2	4	0	5	
AN	7	(1)	7	0	0	0		0	
AP	8		8	0	0	0		0	
AW	6	(1)	6	0	0	0		0	
AX	0		2	2	1	3		3	
AY	2		2	0	0	0		0	
AZ	2		2	0	0	0		0	
B	0		6	10	0	16		16	(2)
BX	0		7	5	0	12	12	12	
BY	0		7	5	5	7		10	
C	0		9	7	3	13		14	
Total	25		59	32	11	55	12	60	
WEST									
S	0		11	1	10	2		4	
SX	0		5	10	6	9		9	
SY	3	(1)	3	0	0	0		0	
T	0		9	7	5	11		14	
TX	0		10	8	0	18	18	18	
TY	0		1	5	0	6	6	6	
U	0		12	4	9	7		8	
Total	3		51	35	30	53	24	59	
TOTAL	28		110	67	41	108	36	119	

(1) Six Double-Shell Tanks on the Hydrogen Tank Watch List are not currently receiving waste transfers (AN-103, 104, 105, AW-101, SY-101 and 103).

(2) Includes tank B-202 which no longer meets established supernatant interstitial liquid stabilization criteria.

TABLE E-3. PUMPING RECORD, LIQUID STATUS AND PUMPABLE LIQUID REMAINING IN TANK FARMS

April 30, 1999

Waste Volumes (Kgallons)

TANK FARMS	PUMPED THIS MONTH	PUMPED FY TO DATE	CUMULATIVE TOTAL PUMPED 1979 TO DATE	SUPERNATANT LIQUID	DRAINABLE INTERSTITIAL REMAINING	DRAINABLE LIQUID REMAINING	PUMPABLE SST LIQUID REMAINING
EAST							
A	0.0	0.0	150.5	517	291	758	697
AN	N/A	N/A	N/A	3704	127	3831	N/A
AP	N/A	N/A	N/A	3837	3	3840	N/A
AW	N/A	N/A	N/A	3373	142	3515	N/A
AX	0.0	0.0	13.0	389	222	611	540
AY	N/A	N/A	N/A	462	9	471	N/A
AZ	N/A	N/A	N/A	1607	5	1612	N/A
B	0.0	0.0	0.0	15	191	206	107
BX	N/A	0.0	200.2	24	107	132	N/A
BY	0.0	0.0	1567.8	0	596	596	476
C	0.0	0.0	103.0	122	199	321	227
Total	0.0	0.0	2034.5	14050	1892	15893	2047
WEST							
S	39.8	39.8	908.2	93	1357	1450	1337
SX	18.4	118.4	245.3	181	1321	1526	1424
SY	N/A	N/A	N/A	2108	0	2108	N/A
T	2.0	30.1	239.6	28	174	202	132
TX	N/A	0.0	1205.7	5	250	255	N/A
TY	N/A	0.0	29.9	3	31	34	N/A
U	0.0	0.0	0.0	168	1407	1575	1484
Total	60.2	188.3	2628.7	2586	4540	7150	4377
TOTAL	60.2	188.3	4663.2	16636	6432 (1)	23043	6424 (1)

(1) Volume based on 21% (sludge waste) and 50% (saltcake waste) liquid in solid (porosity) value, per WHC-SD-W236A-ES-012, Rev .1, dated May 21, 1996, a re-evaluation of the non-stabilized tanks.

N/A = Not applicable for Double-Shell Tank Farms, and Single-Shell Tank Farms which have been declared Controlled, Clean and Stable (BX, TX, TY).

TABLE E-4. INVENTORY SUMMARY BY TANK FARM

April 30, 1999

TANK FARM	TOTAL WASTE	AVAIL SPACE	SUPERNATANT LIQUID VOLUMES (Kgallons) AGING	CC	CP	DC	DN	DN/PD	DN/PT	DSSE	NCPLX	TOTAL	SOLIDS VOLUME DSS	SLUDGE	SALT CAKE	TOTAL
EAST																
A	1537	0	0	0	0	0	0	0	0	517	0	517	0	556	464	1020
AN	5438	2542	0	1790	0	0	126	0	0	1788	0	3704	410	1324	0	1734
AP	3927	5193	0	0	1091	107	849	0	0	1790	0	3837	0	90	0	90
AW	4806	2034	0	351	0	1005	887	312	0	818	0	3373	0	1358	75	1433
AX	906	0	0	3	0	0	0	0	0	386	0	389	0	19	498	517
AY	671	1289	0	0	0	54	408	0	0	0	0	462	0	209	0	209
AZ	1758	202	1607	0	0	0	0	0	0	0	0	1607	0	151	0	151
B	2057	0	0	0	0	0	0	0	0	0	15	15	0	1697	345	2042
BX	1493	0	0	0	0	0	0	0	0	0	24	24	0	1351	121	1472
BY	4482	0	0	0	0	0	0	0	0	0	0	0	0	797	3685	4482
C	1983	0	0	0	0	1	0	0	0	0	121	122	0	1861	0	1861
Total	29058	11260	1607	2144	1091	1167	2270	312	0	5299	160	14050	410	9413	5188	15011
WEST																
S	5212	0	0	0	0	0	0	0	0	76	17	93	0	1206	3913	5119
SX	4333	0	0	0	0	0	0	0	0	0	181	181	0	1310	2842	4152
SY	2603	870	0	1527	0	0	0	0	581	0	0	2108	0	491	4	495
T	1867	0	0	0	0	0	0	0	0	0	28	28	0	1839	0	1839
TX	7009	0	0	0	0	0	0	0	0	0	5	5	0	241	6763	7004
TY	638	0	0	0	0	0	0	0	0	0	3	3	0	571	64	635
U	3551	0	0	0	0	0	0	0	0	31	137	168	0	579	2804	3383
Total	25213	870	0	1527	0	0	0	0	581	107	371	2586	0	6237	16390	22627
TOTAL	54271	12130	1607	3671	1091	1167	2270	312	581	5406	531	16636	410	15650	21578	37638

TABLE E-5. INVENTORY AND STATUS BY TANK - DOUBLE SHELL TANKS

April 30, 1999

TANK STATUS							LIQUID VOLUME				SOLIDS VOLUME			VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WAST MATL	TANK INTEGRITY	TANK USE	EQUIVA-LENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL. SPACE (Kgal)	SUPER-NATANT LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	DSS (Kgal)	SLUDGE	SALT CAKE	LIQUID VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTE FOR THESE CHANGES
									AN TANK FARM STATUS										
AN-101	DN	SOUND	DRCVR	57.8	159	981	126	0	126	126	0	33	0	FM	S	04/30/96	0/ 0/ 0		
AN-102	CC	SOUND	CWHT	385.5	1060	80	971	3	974	971	0	89	0	FM	S	08/22/89	0/ 0/ 0		
AN-103	DSS	SOUND	CWHT	347.6	956	184	546	0	546	546	410	0	0	FM	S	03/31/97	10/29/87		
AN-104	DSSF	SOUND	CWHT	382.5	1052	88	603	48	651	629	0	449	0	FM	S	03/31/97	08/19/88		
AN-105	DSSF	SOUND	CWHT	410.2	1128	12	639	53	692	670	0	489	0	FM	S	03/31/97	01/26/88		
AN-106	CC	SOUND	CWHT	14.2	39	1101	22	0	22	22	0	17	0	FM	S	08/22/89	0/ 0/ 0		
AN-107	CC	SOUND	CWHT	379.6	1044	96	797	23	820	798	0	247	0	FM	S	08/22/89	09/01/88		
7 DOUBLE-SHELL TANKS				TOTALS	5438	2542	3704	127	3831	3762	410	1324	0						
									AP TANK FARM STATUS										
AP-101	DSSF	SOUND	DRCVR	405.1	1114	26	1114	0	1114	1114	0	0	0	FM	S	05/01/89	0/ 0/ 0		
AP-102	CP	SOUND	GRTFD	396.7	1091	49	1091	0	1091	1091	0	0	0	FM	S	07/11/89	0/ 0/ 0		
AP-103	DN	SOUND	DRCVR	8.7	24	1116	23	0	23	23	0	1	0	FM	S	05/31/96	0/ 0/ 0		
AP-104	DN	SOUND	GRTFD	8.7	24	1116	24	0	24	24	0	0	0	FM	S	10/13/88	0/ 0/ 0		
AP-105	DSSF	SOUND	CWHT	278.2	765	375	676	3	679	676	0	89	0	FM	S	03/31/98	0/ 0/ 0	09/27/95	
AP-106	DN	SOUND	DRCVR	34.2	94	1046	94	0	94	94	0	0	0	FM	S	10/13/88	0/ 0/ 0		
AP-107	DN	SOUND	DRCVR	257.5	708	432	708	0	708	708	0	0	0	FM	S	10/13/88	0/ 0/ 0		
AP-108	DC	SOUND	DRCVR	38.9	107	1033	107	0	107	107	0	0	0	FM	S	10/13/88	0/ 0/ 0		
8 DOUBLE-SHELL TANKS				TOTALS	3927	5193	3837	3	3840	3837	0	90	0						
									AW TANK FARM STATUS										
AW-101	DSSF	SOUND	CWHT	408.7	1124	16	818	30	848	826	0	306	0	FM	S	03/31/97	03/17/88		
AW-102	DC	SOUND	EVFD	380.0	1045	95	1005	0	1005	1005	0	40	0	FM	S	08/31/97	02/02/83		
AW-103	DN/PD	SOUND	DRCVR	185.5	510	630	162	35	197	175	0	348	0	FM	S	03/31/98	0/ 0/ 0		
AW-104	DN	SOUND	DRCVR	406.5	1118	22	887	30	917	895	0	156	75	FM	S	03/31/98	02/02/83		
AW-105	DN/PD	SOUND	DRCVR	156.4	430	710	150	27	177	155	0	280	0	FM	S	03/31/98	0/ 0/ 0		
AW-106	CC	SOUND	SRCVR	210.5	579	561	351	20	371	351	0	228	0	FM	S	08/31/97	02/02/83		
6 DOUBLE-SHELL TANKS				TOTALS	4806	2034	3373	142	3515	3407	0	1358	75						

TABLE E-5. INVENTORY AND STATUS BY TANK - DOUBLE SHELL TANKS

April 30, 1999

TANK STATUS							LIQUID VOLUME				SOLIDS VOLUME			VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MATL	TANK INTEGRITY	TANK USE	EQUIVALENT WASTE INCHES	TOTAL WASTE (Kgal)	AVAIL. SPACE (Kgal)	SUPERNATANT LIQUID (Kgal)	DRAINABLE INTERSTIT. (Kgal)	DRAINABLE LIQUID REMAIN (Kgal)	PUMPABLE LIQUID REMAIN (Kgal)	DSS (Kgal)	SLUDGE	SALT CAKE	LIQUID VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTE FOR THESE CHANGES
							AY TANK FARM STATUS												
AY-101	DC	SOUND	DRCVR	58.9	162	818	54	5	59	54	0	108	0	FM	S	10/31/97	12/28/82		
AY-102	DN	SOUND	DRCVR	185.1	509	471	408	4	412	408	0	101	0	FM	S	03/31/99	04/28/81		(c)
2 DOUBLE-SHELL TANKS				TOTALS	671	1289	462	9	471	462	0	209	0						
							AZ TANK FARM STATUS												
AZ-101	AGING	SOUND	CWHT	307.3	845	135	798	0	798	798	0	47	0	FM	S	10/31/97	08/18/83		
AZ-102	AGING	SOUND	DRCVR	332.0	913	67	809	5	814	809	0	104	0	FM	S	10/31/97	10/24/84		
2 DOUBLE-SHELL TANKS				TOTALS	1758	202	1607	5	1612	1607	0	151	0						
							SY TANK FARM STATUS												
SY-101	CC	SOUND	CWHT	433.8	1193	0	1152	0	1152	1152	0	41	0	FM	S	05/31/96	04/12/89		(b)
SY-102	DN/PT	SOUND	DRCVR	243.3	669	471	581	0	581	581	0	88	0	FM	S	03/31/98	04/29/81		(a)
SY-103	CC	SOUND	CWHT	269.5	741	399	375	0	375	375	0	362	4	FM	S	06/30/96	10/01/85		
3 DOUBLE-SHELL TANKS				TOTALS	2603	870	2108	0	2108	2108	0	491	4						
GRAND TOTAL					19203	12130	15091	286	15377	15183	410	3623	79						

Note: +/- 1 Kgal differences are the result of computer rounding

Tank Farms	Available Space Calculations Used in This Document (Most Conservative)
AN, AP, AW, SY	1,140,000 gal (414.5 in.)
AY, AZ (Aging Waste)	980,000 gal (356.4 in.)

NOTE: Tanks AN-102, AN-107, AY-101, AY-102, AP-103, AP-104, AP-107 - These tanks currently contain waste that is outside of the current corrosion control specification. An alternate strategy of corrosion control (monitor using corrosion probes; adjust chemistry as required for control) is being proposed but has not been fully evaluated. Note that the supernate in AY-102 is within the corrosion specifications, however, the sludge layer is outside the specifications.

(b) Tank SY-101 - Total Waste exceeds the "most conservative" Available Space calculations used for these tanks in this document.

(c) Tank AY-102 - Sludge volume is increased to 101 Kgals due to sluicing from C-106 in April 1999.

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPERNATE LIQUID (Kgal)	DRAINABLE INTERSTIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAINABLE LIQUID REMAIN (Kgal)	PUMPABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
A TANK FARM STATUS																		
A-101	DSSF	SOUND	/PI	953	508	263	0.0	0.0	721	697	3	442	P	F	12/31/98	08/21/85		(e)
A-102	DSSF	SOUND	IS/PI	41	4	2	0.0	39.5	6	0	15	22	P	FP	07/27/89	07/20/89		
A-103	DSSF	ASMD LKR	IS/IP	371	5	15	0.0	111.0	20	0	366	0	-	FP	06/03/88	12/28/88		
A-104	NCPLX	ASMD LKR	IS/IP	28	0	0	0.0	0.0	0	0	28	0	M	PS	01/27/78	06/25/86		
A-105	NCPLX	ASMD LKR	IS/IP	19	0	4	0.0	0.0	4	0	19	0	P	MP	08/23/79	08/20/86		
A-106	CP	SOUND	IS/IP	125	0	7	0.0	0.0	7	0	125	0	P	M	09/07/82	08/19/86		
6 SINGLE-SHELL TANKS			TOTALS	1537	517	291	0.0	150.5	758	697	556	464						
AX TANK FARM STATUS																		
AX-101	DSSF	SOUND	/PI	748	386	172	0.0	0.0	558	534	3	359	P	F	12/31/98	08/18/87		(e)
AX-102	CC	ASMD LKR	IS/IP	39	3	14	0.0	13.0	17	3	7	29	F	S	09/06/88	06/05/89		
AX-103	CC	SOUND	IS/IP	112	0	36	0.0	0.0	36	3	2	110	F	S	08/19/87	08/13/87		
AX-104	NCPLX	ASMD LKR	IS/IP	7	0	0	0.0	0.0	0	0	7	0	P	M	04/28/82	08/18/87		
4 SINGLE-SHELL TANKS			TOTALS:	906	389	222	0.0	13.0	611	540	19	498						
B TANK FARM STATUS																		
B-101	NCPLX	ASMD LKR	IS/IP	113	0	6	0.0	0.0	6	0	113	0	P	F	04/28/82	05/19/83		
B-102	NCPLX	SOUND	IS/IP	32	4	0	0.0	0.0	4	0	18	10	P	F	08/22/85	08/22/85		
B-103	NCPLX	ASMD LKR	IS/IP	59	0	0	0.0	0.0	0	0	59	0	F	F	02/28/85	10/13/88		
B-104	NCPLX	SOUND	IS/IP	371	1	44	0.0	0.0	45	38	301	69	M	M	06/30/85	10/13/88		(h)
B-105	NCPLX	ASMD LKR	IS/IP	306	0	23	0.0	0.0	23	0	40	266	P	MP	12/27/84	05/19/88		
B-106	NCPLX	SOUND	IS/IP	117	1	6	0.0	0.0	7	0	116	0	F	F	03/31/85	02/28/85		
B-107	NCPLX	ASMD LKR	IS/IP	165	1	12	0.0	0.0	13	7	164	0	M	M	03/31/85	02/28/85		
B-108	NCPLX	SOUND	IS/IP	94	0	4	0.0	0.0	4	0	94	0	F	F	05/31/85	05/10/85		
B-109	NCPLX	SOUND	IS/IP	127	0	8	0.0	0.0	8	0	127	0	M	M	04/08/85	04/02/85		
B-110	NCPLX	ASMD LKR	IS/IP	246	1	37	0.0	0.0	38	32	245	0	MP	MP	02/28/85	03/17/88		(h)
B-111	NCPLX	ASMD LKR	IS/IP	237	1	35	0.0	0.0	36	30	236	0	F	F	06/28/85	06/26/85		(h)
B-112	NCPLX	ASMD LKR	IS/IP	33	3	0	0.0	0.0	3	0	30	0	F	F	05/31/85	05/29/85		
B-201	NCPLX	ASMD LKR	IS/IP	29	1	3	0.0	0.0	4	0	28	0	M	M	04/28/82	11/12/86	06/23/95	
B-202	NCPLX	SOUND	IS/IP	27	0	3	0.0	0.0	3	0	27	0	P	M	05/31/85	05/29/85	06/15/95	
B-203	NCPLX	ASMD LKR	IS/IP	51	1	5	0.0	0.0	6	0	50	0	PM	PM	05/31/84	11/13/86		
B-204	NCPLX	ASMD LKR	IS/IP	50	1	5	0.0	0.0	6	0	49	0	P	M	05/31/84	10/22/87		
16 SINGLE-SHELL TANKS			TOTALS	2057	15	191	0.0	0.0	206	107	1697	345						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								BX TANK FARM STATUS										
BX-101	NCPLX	ASMD LKR	IS/IP/CCS	43	1	0	0.0	0.0	1	0	42	0	P	M	04/28/82	11/24/88	11/10/94	
BX-102	NCPLX	ASMD LKR	IS/IP/CCS	96	0	4	0.0	0.0	4	0	96	0	P	M	04/28/82	09/18/85		
BX-103	NCPLX	SOUND	IS/IP/CCS	71	9	0	0.0	0.0	9	0	62	0	P	F	11/29/83	10/31/86	10/27/94	(h)
BX-104	NCPLX	SOUND	IS/IP/CCS	99	3	30	0.0	17.4	33	27	96	0	F	F	09/22/89	09/21/89		
BX-105	NCPLX	SOUND	IS/IP/CCS	51	5	6	0.0	15.0	11	4	43	3	F	S	09/03/86	10/23/86		
BX-106	NCPLX	SOUND	IS/IP/CCS	38	0	0	0.0	14.0	0	0	38	0	MP	PS	08/01/95	05/19/88	07/17/95	
BX-107	NCPLX	SOUND	IS/IP/CCS	345	1	29	0.0	23.1	30	23	344	0	MP	P	09/18/90	09/11/90		
BX-108	NCPLX	ASMD LKR	IS/IP/CCS	26	0	1	0.0	0.0	1	0	26	0	M	PS	07/31/79	05/05/94		
BX-109	NCPLX	SOUND	IS/IP/CCS	193	0	13	0.0	8.2	13	8	193	0	FP	P	09/17/90	09/11/90		
BX-110	NCPLX	ASMD LKR	IS/IP/CCS	207	3	16	0.0	1.5	19	13	195	9	MP	M	10/31/94	07/15/94	10/13/94	
BX-111	NCPLX	ASMD LKR	IS/IP/CCS	162	1	1	0.0	116.9	3	1	52	109	M	M	04/06/95	05/19/94	02/28/95	
BX-112	NCPLX	SOUND	IS/IP/CCS	165	1	7	0.0	4.1	8	2	164	0	FP	P	09/17/90	09/11/90		
12 SINGLE-SHELL TANKS			TOTALS:	1496	24	107	0.0	200.2	132	78	1351	121						
								BY TANK FARM STATUS										
BY-101	NCPLX	SOUND	IS/IP	387	0	5	0.0	35.8	5	0	109	278	P	M	05/30/84	09/19/89		
BY-102	NCPLX	SOUND	IS/PI	277	0	11	0.0	159.0	11	0	0	277	MP	M	05/01/95	09/11/87	04/11/95	
BY-103	NCPLX	ASMD LKR	IS/PI	414	0	38	0.0	95.9	38	32	5	409	MP	M	11/25/97	09/07/89	02/24/97	
BY-104	NCPLX	SOUND	IS/IP	406	0	18	0.0	329.5	18	0	40	366	P	M	04/28/82	04/27/83		
BY-105	NCPLX	ASMD LKR	/PI	504	0	192	0.0	0.0	192	186	159	345	P	MP	12/31/98	07/01/86		(e)
BY-106	NCPLX	ASMD LKR	/PI	562	0	244	0.0	63.7	244	238	84	478	P	MP	12/31/98	11/04/82		(e)
BY-107	NCPLX	ASMD LKR	IS/IP	266	0	25	0.0	56.4	25	0	60	206	P	MP	04/28/82	10/15/86		
BY-108	NCPLX	ASMD LKR	IS/IP	228	0	9	0.0	27.5	9	0	154	74	MP	M	04/28/82	10/15/86		
BY-109	NCPLX	SOUND	IS/PI	290	0	37	0.0	157.1	37	20	57	233	F	PS	07/08/87	06/18/97		
BY-110	NCPLX	SOUND	IS/IP	398	0	9	0.0	213.3	9	0	103	295	M	S	09/10/79	07/26/84		
BY-111	NCPLX	SOUND	IS/IP	459	0	0	0.0	313.2	0	0	21	438	P	M	04/28/82	10/31/86		
BY-112	NCPLX	SOUND	IS/IP	291	0	8	0.0	116.4	8	0	5	286	P	M	04/28/82	04/14/88		
12 SINGLE-SHELL TANKS			TOTALS:	4482	0	596	0.0	1567.8	596	476	797	3685						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								C TANK FARM STATUS										
C-101	NCPLX	ASMD LKR	IS/IP	88	0	3	0.0	0.0	3	0	88	0	M	M	11/29/83	11/17/87		
C-102	DC	SOUND	IS/IP	316	0	30	0.0	46.7	30	17	316	0	F	FP	09/30/95	05/18/76	08/24/95	
C-103	NCPLX	SOUND	/PI	202	83	11	0.0	0.0	94	88	119	0	F	S	12/31/98	07/28/87		(e)
C-104	CC	SOUND	IS/IP	295	0	11	0.0	0.0	11	5	295	0	FP	P	09/22/89	07/25/90		
C-105	NCPLX	SOUND	IS/PI	134	2	30	0.0	0.0	32	9	132	0	F	S	10/31/95	08/05/94	08/30/95	
C-106	NCPLX	SOUND	/PI	229	32	30	0.0	0.0	62	52	197	0	F	PS	04/28/82	08/05/94	08/08/94	
C-107	DC	SOUND	IS/IP	237	0	24	0.0	40.8	24	15	237	0	F	S	09/30/95	00/00/00		
C-108	NCPLX	SOUND	IS/IP	66	0	0	0.0	0.0	0	0	66	0	M	S	02/24/84	12/05/74	11/17/94	
C-109	NCPLX	SOUND	IS/IP	66	4	0	0.0	0.0	4	0	62	0	M	PS	11/29/83	01/30/76		
C-110	DC	ASMD LKR	IS/IP	178	1	28	0.0	15.5	29	15	177	0	F	FMP	06/14/95	08/12/86	05/23/95	
C-111	NCPLX	ASMD LKR	IS/IP	57	0	0	0.0	0.0	0	0	57	0	M	S	04/28/82	02/25/70	02/02/95	
C-112	NCPLX	SOUND	IS/IP	104	0	32	0.0	0.0	32	26	104	0	M	PS	09/18/90	09/18/90		
C-201	NCPLX	ASMD LKR	IS/IP	2	0	0	0.0	0.0	0	0	2	0	P	MP	03/31/82	12/02/86		
C-202	EMPTY	ASMD LKR	IS/IP	1	0	0	0.0	0.0	0	0	1	0	P	M	01/19/79	12/09/86		
C-203	NCPLX	ASMD LKR	IS/IP	5	0	0	0.0	0.0	0	0	5	0	P	MP	04/28/82	12/09/86		
C-204	NCPLX	ASMD LKR	IS/IP	3	0	0	0.0	0.0	0	0	3	0	P	MP	04/28/82	12/09/86		
16 SINGLE-SHELL TANKS			TOTALS:	1983	122	199	0.0	103.0	321	227	1861	0						
								S TANK FARM STATUS										
S-101	NCPLX	SOUND	/PI	427	12	132	0.0	0.0	144	138	211	204	F	PS	12/31/98	03/18/88		(e)
S-102	DSSF	SOUND	/PI	549	0	202	13.0	27.8	202	196	105	444	P	FP	12/31/98	03/18/88		(e)(f)
S-103	DSSF	SOUND	/PI	248	17	105	0.0	0.0	122	110	9	222	M	S	12/31/98	06/01/89		(e)
S-104	NCPLX	ASMD LKR	IS/IP	294	1	28	0.0	0.0	29	23	293	0	M	M	12/20/84	12/12/84		
S-105	NCPLX	SOUND	IS/IP	456	0	35	0.0	114.3	35	13	2	454	MP	S	09/26/88	04/12/89		
S-106	NCPLX	SOUND	/PI	452	26	205	26.8	123.8	231	216	0	426	P	FP	12/31/98	03/17/89	09/12/94	(e)(g)
S-107	NCPLX	SOUND	/PI	376	14	82	0.0	0.0	96	90	293	69	F	PS	12/31/98	03/12/87		(e)
S-108	NCPLX	SOUND	IS/PI	450	0	4	0.0	199.8	4	0	4	446	P	MP	12/20/96	03/12/87	12/03/96	
S-109	NCPLX	SOUND	/PI	507	0	177	0.0	111.0	177	167	13	494	F	PS	09/30/75	12/31/98		(e)
S-110	NCPLX	SOUND	IS/PI	390	0	30	0.0	203.1	30	23	131	259	F	PS	05/14/92	03/12/87	12/11/96	
S-111	NCPLX	SOUND	/PI	540	23	204	0.0	3.3	227	221	139	378	P	FP	12/31/98	08/10/89		(e)
S-112	NCPLX	SOUND	/PI	523	0	153	0.0	125.1	153	140	6	517	P	FP	12/31/98	03/24/87		(e)
12 SINGLE-SHELL TANKS			TOTALS:	5212	93	1357	39.8	908.2	1450	1337	1206	3913						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								SX TANK FARM STATUS										
SX-101	DC	SOUND	/PI	442	0	170	0.0	0.0	170	163	128	314	P	FP	12/31/98	03/10/89		(e)
SX-102	DSSF	SOUND	/PI	543	0	224	0.0	0.0	224	216	117	426	P	M	12/31/98	01/07/88		(e)
SX-103	NCPLX	SOUND	/PI	651	0	278	0.0	0.0	278	271	115	536	F	S	12/31/98	12/17/87		(e)
SX-104	DSSF	ASMD LKR	/PI	584	0	149	6.2	204.0	149	141	136	448	F	S	12/31/98	09/08/88	02/04/98	(a)(e)
SX-105	DSSF	SOUND	/PI	683	0	309	0.0	0.0	309	301	73	610	P	F	12/31/98	06/15/88		(d)(e)
SX-106	NCPLX	SOUND	/PI	497	181	109	12.2	41.3	314	307	52	264	F	PS	12/31/98	06/01/89		(b)(e)
SX-107	NCPLX	ASMD LKR	IS/IP	104	0	5	0.0	0.0	5	0	104	0	P	M	04/28/82	03/06/87		
SX-108	NCPLX	ASMD LKR	IS/IP	87	0	5	0.0	0.0	5	0	87	0	P	M	12/31/93	03/06/87		
SX-109	NCPLX	ASMD LKR	IS/IP	244	0	48	0.0	0.0	48	25	0	244	P	M	01/10/96	05/21/86		
SX-110	NCPLX	ASMD LKR	IS/IP	62	0	0	0.0	0.0	0	0	62	0	M	PS	10/06/76	02/20/87		
SX-111	NCPLX	ASMD LKR	IS/IP	125	0	7	0.0	0.0	7	0	125	0	M	PS	05/31/74	06/09/94		
SX-112	NCPLX	ASMD LKR	IS/IP	92	0	3	0.0	0.0	3	0	92	0	P	M	04/28/82	03/10/87		
SX-113	NCPLX	ASMD LKR	IS/IP	26	0	0	0.0	0.0	0	0	26	0	P	M	04/28/82	03/18/88		
SX-114	NCPLX	ASMD LKR	IS/IP	181	0	14	0.0	0.0	14	0	181	0	P	M	04/28/82	02/26/87		
SX-115	NCPLX	ASMD LKR	IS/IP	12	0	0	0.0	0.0	0	0	12	0	P	M	04/28/82	03/31/88		
15 SINGLE-SHELL TANKS			TOTALS:	4333	181	1321	18.4	245.3	1526	1424	1310	2842						
								T TANK FARM STATUS										
T-101	NCPLX	ASMD LKR	IS/PI	102	1	16	0.0	25.3	17	0	101	0	F	S	04/14/93	04/07/93		
T-102	NCPLX	SOUND	IS/IP	32	13	0	0.0	0.0	13	13	19	0	P	FP	08/31/84	06/28/89		(h)
T-103	NCPLX	ASMD LKR	IS/IP	27	4	0	0.0	0.0	4	0	23	0	F	FP	11/29/83	07/03/84		
T-104	NCPLX	SOUND	/PI	326	0	31	0.2	147.6	31	25	326	0	P	MP	04/30/99	06/29/89		(c)(e)
T-105	NCPLX	SOUND	IS/IP	98	0	23	0.0	0.0	23	17	98	0	P	F	05/29/87	05/14/87		
T-106	NCPLX	ASMD LKR	IS/IP	21	2	0	0.0	0.0	2	0	19	0	P	FP	04/28/82	06/29/89		
T-107	NCPLX	ASMD LKR	IS/PI	173	0	22	0.0	11.0	22	12	173	0	P	FP	05/31/96	07/12/84	05/09/96	
T-108	NCPLX	ASMD LKR	IS/IP	44	0	0	0.0	0.0	0	0	44	0	P	M	04/28/82	07/17/84		

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUME		VOLUME DETERMINATION					
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
T-109	NCPLX	ASMD LKR	IS/IP	58	0	0	0.0	0.0	0	0	58	0	M	M	12/30/84	02/25/93		
T-110	NCPLX	SOUND	/PI	350	0	35	1.8	46.1	35	29	350	0	P	FP	04/30/99	07/12/84		(d)(e)
T-111	NCPLX	ASMD LKR	IS/PI	446	0	34	0.0	9.6	34	29	446	0	P	FP	04/18/94	04/13/94	02/13/95	
T-112	NCPLX	SOUND	IS/IP	67	7	0	0.0	0.0	7	7	60	0	P	FP	04/28/82	08/01/84		(h)
T-201	NCPLX	SOUND	IS/IP	29	1	3	0.0	0.0	4	0	28	0	M	PS	05/31/78	04/15/86		
T-202	NCPLX	SOUND	IS/IP	21	0	2	0.0	0.0	2	0	21	0	FP	P	07/12/81	07/06/89		
T-203	NCPLX	SOUND	IS/IP	35	0	4	0.0	0.0	4	0	35	0	M	PS	01/31/78	08/03/89		
T-204	NCPLX	SOUND	IS/IP	38	0	4	0.0	0.0	4	0	38	0	FP	P	07/22/81	08/03/89		
16 SINGLE-SHELL TANKS			TOTALS:	1867	28	174	2.0	239.6	202	132	1839	0						
							TX TANK FARM STATUS											
TX-101	NCPLX	SOUND	IS/IP/CCS	87	3	2	0.0	0.0	5	0	84	0	F	P	02/02/84	10/24/85		
TX-102	NCPLX	SOUND	IS/IP/CCS	217	0	22	0.0	94.4	22	0	0	217	M	S	08/31/84	10/31/85		
TX-103	NCPLX	SOUND	IS/IP/CCS	157	0	15	0.0	68.3	15	0	157	0	F	S	08/14/80	10/31/85		
TX-104	NCPLX	SOUND	IS/IP/CCS	65	1	14	0.0	3.6	15	0	0	64	F	FP	04/06/84	10/16/84		
TX-105	NCPLX	ASMD LKR	IS/IP/CCS	609	0	20	0.0	121.5	20	0	0	609	M	PS	08/22/77	10/24/89		
TX-106	NCPLX	SOUND	IS/IP/CCS	453	0	10	0.0	134.6	10	0	0	453	M	S	08/29/77	10/31/85		
TX-107	NCPLX	ASMD LKR	IS/IP/CCS	36	1	1	0.0	0.0	2	0	0	35	FP	FP	01/20/84	10/31/85		
TX-108	NCPLX	SOUND	IS/IP/CCS	134	0	0	0.0	13.7	0	0	0	134	P	FP	05/30/83	09/12/89		
TX-109	NCPLX	SOUND	IS/IP/CCS	384	0	10	0.0	72.3	10	0	0	384	F	PS	05/30/83	10/24/89		
TX-110	NCPLX	ASMD LKR	IS/IP/CCS	462	0	15	0.0	115.1	15	0	0	462	M	PS	05/30/83	10/24/89		
TX-111	NCPLX	SOUND	IS/IP/CCS	370	0	9	0.0	98.4	9	0	0	370	M	PS	07/26/77	09/12/89		
TX-112	NCPLX	SOUND	IS/IP/CCS	649	0	24	0.0	94.0	24	0	0	649	P	PS	05/30/83	11/19/87		
TX-113	NCPLX	ASMD LKR	IS/IP/CCS	607	0	16	0.0	19.2	16	0	0	607	M	PS	05/30/83	04/11/83	09/23/94	
TX-114	NCPLX	ASMD LKR	IS/IP/CCS	535	0	15	0.0	104.3	15	0	0	535	M	PS	05/30/83	04/11/83	02/17/95	
TX-115	NCPLX	ASMD LKR	IS/IP/CCS	640	0	19	0.0	99.1	19	0	0	640	M	PS	05/30/83	04/11/83		
TX-116	NCPLX	ASMD LKR	IS/IP/CCS	631	0	23	0.0	23.8	23	0	0	631	M	S	03/25/83	06/15/88		
TX-117	NCPLX	ASMD LKR	IS/IP/CCS	626	0	8	0.0	54.3	8	0	0	626	M	PS	03/31/72	10/17/89		
TX-118	NCPLX	SOUND	IS/IP/CCS	347	0	27	0.0	89.1	27	0	0	347	F	S	11/17/80	12/19/79		
18 SINGLE-SHELL TANKS			TOTALS:	7009	5	250	0.0	1205.7	255	0	241	6763						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

TANK STATUS					LIQUID VOLUME						SOLIDS VOLUM		VOLUME DETERMINATION			PHOTOS/VIDEOS		
TANK	WASTE MAT'L.	TANK INTEGRITY	STABIL/ ISOLATION STATUS	TOTAL WASTE (Kgal)	SUPER-NATE LIQUID (Kgal)	DRAIN-ABLE INTER-STIT. (Kgal)	PUMPED THIS MONTH (Kgal)	TOTAL PUMPED (Kgal)	DRAIN-ABLE LIQUID REMAIN (Kgal)	PUMP-ABLE LIQUID REMAIN (Kgal)	SLUDGE (Kgal)	SALT CAKE (Kgal)	LIQUIDS VOLUME METHOD	SOLIDS VOLUME METHOD	SOLIDS VOLUME UPDATE	LAST IN-TANK PHOTO	LAST IN-TANK VIDEO	SEE FOOTNOTES FOR THESE CHANGES
								TY TANK FARM STATUS										
TY-101	NCPLX	ASMD LKR	IS/IP/CCS	118	0	0	0.0	8.2	0	0	118	0	P	F	04/28/82	08/22/89		
TY-102	NCPLX	SOUND	IS/IP/CCS	64	0	14	0.0	6.6	14	0	0	64	P	FP	06/28/82	07/07/87		
TY-103	NCPLX	ASMD LKR	IS/IP/CCS	162	0	5	0.0	11.5	5	0	162	0	P	FP	07/09/82	08/22/89		
TY-104	NCPLX	ASMD LKR	IS/IP/CCS	46	3	12	0.0	0.0	15	0	43	0	P	FP	06/27/90	11/03/87		
TY-105	NCPLX	ASMD LKR	IS/IP/CCS	231	0	0	0.0	3.6	0	0	231	0	P	M	04/28/82	09/07/89		
TY-106	NCPLX	ASMD LKR	IS/IP/CCS	17	0	0	0.0	0.0	0	0	17	0	P	M	04/28/82	08/22/89		
6 SINGLE-SHELL TANKS			TOTALS:	638	3	31	0.0	29.9	34	0	571	64						
								U TANK FARM STATUS										
U-101	NCPLX	ASMD LKR	IS/IP	25	3	0	0.0	0.0	3	0	22	0	P	MP	04/28/82	06/19/79		
U-102	NCPLX	SOUND	/PI	375	18	157	0.0	0.0	175	168	43	314	P	MP	12/31/98	06/08/89		(e)
U-103	NCPLX	SOUND	/PI	468	13	216	0.0	0.0	229	218	12	443	P	FP	12/31/98	09/13/88		(e)
U-104	NCPLX	ASMD LKR	IS/IP	122	0	7	0.0	0.0	7	0	122	0	P	MP	04/28/82	08/10/89		
U-105	NCPLX	SOUND	/PI	418	37	173	0.0	0.0	210	204	32	349	FM	PS	12/31/98	07/07/88		(e)
U-106	NCPLX	SOUND	/PI	226	15	97	0.0	0.0	112	98	0	211	F	PS	12/31/98	07/07/88		(e)
U-107	DSSF	SOUND	/PI	406	31	175	0.0	0.0	206	196	15	360	F	S	12/31/98	10/27/88		(e)
U-108	NCPLX	SOUND	/PI	468	24	205	0.0	0.0	229	223	29	415	F	S	12/31/98	09/12/84		(e)
U-109	NCPLX	SOUND	/PI	463	19	203	0.0	0.0	222	216	35	409	F	F	12/31/98	07/07/88		(e)
U-110	NCPLX	ASMD LKR	IS/PI	186	0	25	0.0	0.0	25	19	186	0	M	M	12/30/84	12/11/84		(h)
U-111	DSSF	SOUND	/PI	329	0	149	0.0	0.0	149	142	26	303	PS	FPS	12/31/98	06/23/88		(e)
U-112	NCPLX	ASMD LKR	IS/IP	49	4	0	0.0	0.0	4	0	45	0	P	MP	02/10/84	08/03/89		
U-201	NCPLX	SOUND	IS/IP	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79	08/08/89		
U-202	NCPLX	SOUND	IS/IP	5	1	0	0.0	0.0	1	0	4	0	M	S	08/15/79	08/08/89		
U-203	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79	06/13/89		
U-204	NCPLX	SOUND	IS/IP	3	1	0	0.0	0.0	1	0	2	0	M	S	08/15/79	06/13/89		
16 SINGLE-SHELL TANKS			TOTALS:	3551	168	1407	0.0	0.0	1575	1484	579	2804						
GRAND TOTAL				35071	1545	6146	60.2	4663.2	7666	6502	12027	21499						

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

Total Waste is calculated as the sum of Sludge and Saltcake plus Supernate.

The category "Interim Isolated" (II) was changed to "Intrusion Prevention" (IP) in June 1993. See section C. "Tank and Equipment Code and Status Definitions."

Stabilization information from WHC-SD-RE-TI-178 SST STABILIZATION RECORD, latest revision, or SST Stabilization or Cognizant Engineer

(a) SX-104 Following information from Cognizant Engineer

Several transfers to SY-102 were performed during April 1999. The cross-site transfer performed from April 1 to 9 impacted saltwell pumping.
Volumes reported are based on Best-Basis Inventory Control values and will be udated annually as pumping data accumulates.

Total Waste: 584 Kgal
Supernate: 0 Kgal
Drainable Interstitial: 149.0 Kgal
Pumped this month: 6.2 Kgal
Total Pumped: 204.0 Kgal
Drainable Liquid Remaining: 149.0 Kgal
Pumpable Liquid Remaining: 141.0 Kgal
Sludge: 136 Kgal
Saltcake: 448 Kgal

Pumping during April 1999 required 12,193 gal of dilution water and 2,283 gal of water for transfer line flushes. A total of 6,592 gal of waste was removed from the tank, and a total of 433 gal of water was added by pump priming and equipment flushes for a net removal of 14,697 gal of waste. There may be less pumpable fluid than originally expected.
The porosity of the waste seems to be about 35% indicated by recent data. If this trend continues, there would be only about 95 Kgal of fluid remaining.

(b) SX-106 Following information from Cognizant Engineer

Several transfers to SY-102 were performed during April 1999. The cross-site transfer perfromed from April 1 to 9 impacted saltwell pumping.
Volumes reported are based on Best-Bassis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 496.7 Kgal
Supernate: 180.7 Kgal
Drainable Interstitial: 109 Kgal
Pumped this month: 12.2 Kgal
Total Pumped: 41.3 Kgal
Drainable Liquid Remaining: 313.7 Kgal
Pumpable Liquid Remaining: 306.7
Sludge: 52 Kgal
Saltcake: 264 Kgal

Pumping during April 1999 required 11,021 gal of dilution water and 2,081 gal of water for transfer line flushes. A total of 12,628 gal of waste was removed from the tank, and a total of 470 gal of flush water was added by pump priming and equipment flushes, for a net removal of 12,158 gal of waste.

TABLE E-6. INVENTORY AND STATUS BY TANK - SINGLE-SHELL TANKS

April 30, 1999

THESE VOLUMES ARE THE RESULT OF ENGINEERING CALCULATIONS AND MAY NOT AGREE WITH SURFACE LEVEL MEASUREMENTS

FOOTNOTES:

(c) T-104 Following information from Cognizant Engineer

Pumping resumed June 7, 1998. No pumping in February 1999; pumping resumed March 24.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 326 Kgal
Supernate: 0 Kgal
Drainable Interstitial: 30.6 Kgal
Pumped this month: 0.2 Kgal
Total Pumped: 147.6 Kgal
Drainable Liquid Remaining: 30.6 Kgal
Pumpable Liquid Remaining: 24.6 Kgal
Sludge: 326 Kgal
Saltcake: 0 Kgal

Actual volume of liquid remaining to be pumped is still a rough estimate. A review of tank pumping and level data indicates >50,000 gal pumpable liquid remaining.
Pumping during April required 267 gal of raw water. Pumping operations were disrupted in April by valve and/or DOV problems which resulted in inability to maintain minimum saltwell fluid level and required pumping flow rate. Repair and modified pumping operations are being investigated.

(d) T-110 Following information from Cognizant Engineer
Pumping began May 21, 1997. No pumping in February 1999; pumping resumed in March.
Volumes reported are based on Best-Basis Inventory Control values and will be updated annually as pumping data accumulates.

Total Waste: 350 Kgal
Supernate: 0 Kgal
Drainable Interstitial: 35.1 Kgal
Pumped this month: 1.8 Kgal
Total Pumped: 46.1 Kgal
Drainable Liquid Remaining: 35.1 Kgal
Pumpable Liquid Remaining: 29.1 Kgal
Sludge: 350 Kgal
Saltcake: 0 Kgal

Actual volume of liquid remaining to be pumped is still a rough estimate. Dome elevation survey performed on October 27, 1998. Between October 27 and April 28, 1999, 9,875 gal of actual waste has been pumped.
Pumping during April required 2,586 gal of raw water.

(e) Volume estimates for the remaining 29 SSTs (excluding C-106) not yet interim stabilized were revised per HNF-2978, "Updated Jet Pump Durations for Interim Stabilization of Remaining Single-Shell Tanks," Rev. 0, R. D. Schrieber, dated July 15, 1998. This included supernate, saltcake, sludge, drainable liquid remaining, drainable interstitial liquid, and pumpable liquid remaining. Volume estimates were again revised for Drainable Interstitial Liquid in these tanks per Rev.0 updated March 24, 1999.

FOOTNOTES:

(f) S-102 Following information from Cognizant Engineer

Pumping commenced March 18, 1999. The waste is pumped directly to SY-102. Pumping was interrupted by the cross-site transfer from April 1 to 9, and then resumed.

Total Waste: 549
Supernate: 0 Kgal
Drainable Interstitial: 202.2 Kgal
Pumped this month: 13.0 Kgal
Total Pumped: 27.8 Kgal
Drainable Liquid Remaining: 202.2 Kgal
Pumpable Liquid Remaining: 196.2 Kgal
Sludge: 105 Kgal
Saltcake: 444 Kgal

Pumping during April required 8,994 gal of dilution water and 229 gal of water for transfer line flushes. A total of 14,636 gal of waste was removed from the tank, and a total of 1,247 gal of water was added by pump priming and equipment flushes for a net removal of 12,958 gal of waste. This tank was not thought to have any supernate, but pumping so far would indicate that there is a pool of supernate near the center of the tank. The ENRAF in riser 2 and the LOW in riser 5 are both located toward the center of the tank and have been tracking closely. Most, if anot all of the waste removed so far is probably supernate and not interstititial liquid.

(g) S-106 Following information from Cognizant Engineer

Pumping commenced on April 15, 1999. The waste is pumped directly to SY-102.

Total Waste: 452.2 Kgal
Supernate: 26.2 Kgal
Drainable Interstitial: 205.0 Kgal
Pumped this Month: 26.8 Kgal
Total Pumped: 123.8 Kgal
Drainable Liquid Remaining: 231.2 Kgal
Pumpable Liquid Remaing: 216.2 Kgal
Sludge: 0 Kgal
Saltcake: 426 Kgal

A total of 26,792 gal of fluid was removed from the tank and a total of 405 gal of water was added by pump priming and equipment flushes, for a net removal of 26,387 gal of of tank waste in April 1999. In addition, 115 gal of water was used for transfer line flushes.

(h) Tank B-104 - DIL, DLR and PLR volumes were changed per WHC-SD-WM-ER-622, dated September 1996.
Tanks B-110, B-111 and U-110 - DIL, DLR and PLR volumes were recalculated to reflect the change in porosity from 16% to 21%.
Tanks BX-103, T-102 and T-112 no longer meet the supernatant criteria for interim stabilization. An evaluation indicated no further pumping be performed in these tanks. Supernatant volumes have been changed in BX-103; no changes were made in the volumes in T-102 and T-112.

APPENDIX F

PERFORMANCE SUMMARY

TABLE F-1. PERFORMANCE SUMMARY (Sheet 1 of 2)

WASTE VOLUMES (Kgallons)

April 30, 1999

INCREASES/DECREASES IN WASTE VOLUMES STORED IN DOUBLE-SHELL TANKS

SOURCE		THIS MONTH	FY1999 TO DATE
B PLANT		0	0
PUREX TOTAL (1)		0	0
PFP (1)		0	0
T PLANT (1)		0	0
S PLANT (1)		0	1
300 AREAS (1)		0	0
400 AREAS (1)		0	0
SULFATE WASTE -100 N (2)		0	0
C-106 SOLIDS (INCLUDING FLUSH)		39	50
TRAINING/X-SITE (9)		36	62
TANK FARMS (6)		4	32
SALTWELL LIQUID (8)		89	454
OTHER GAINS		10	95
Slurry increase (3)	4		
Condensate	6		
Instrument change (7)	0		
Unknown (5)	0		
OTHER LOSSES		-5	-89
Slurry decrease (3)	-2		
Evaporation (4)	-3		
Instrument change (7)	0		
Unknown (5)	0		
EVAPORATED		0	0
GROUTED		0	0
TOTAL		173	605

CUMULATIVE EVAPORATION - 1950 TO PRESENT WASTE VOLUME REDUCTION

FACILITY		
242-B EVAPORATOR (10)		7172
242-T EVAPORATOR (1950's) (10)		9181
IN-TANK SOLIDIFICATION UNIT 1 (10)		11876
IN-TANK SOLIDIFICATION UNIT 2 (10)		15295
IN-TANK SOLID. UNIT 1 & 2 (10)		7965
(after conversion of Unit 1 to a cooler for Unit 2)		8833
242-T (Modified) (10)		24471
242-S EVAPORATOR (10)		41983
242-A EVAPORATOR (11)		73689
242-A Evaporator was restarted April 15, 1994, after having been shut down since April 1989.		
Total waste reduction since restart:		9486
Campaign 94-1	2417 Kgal	
Campaign 94-2	2787 Kgal	
Campaign 95-1	2161 Kgal	
Campaign 96-1	1117 Kgal	
Campaign 97-1	351 Kgal	
Campaign 97-2	653 Kgal	

TABLE F-1. PERFORMANCE SUMMARY
(Sheet 2 of 2)

Footnotes:

INCREASES/DECREASES IN WASTE VOLUMES

(1) Including flush

(2) Sulfate waste is generated from ion exchange backflushing and sand filter clean out, resulting in sulfate waste.

(3) Slurry increase/growth is caused by gas generation within the waste.

(4) Aging waste tanks

(5) Unknown waste gains or losses

(6) Includes Tank Farms miscellaneous flushes

(7) Liquid level measurement instrument changes from the automatic FIC to manual tape (and vice versa) result in unusual gains or losses because the manual tape may rest on an uneven crust surface giving a different reading from that of the automatic FIC.

(8) Results from pumping of single-shell tanks to double-shell tanks.

(9) Tracks waste being sent to the double-shell tanks from the "Precampaign Training Run." Evaporator procedures require a training run at least once per year. This also includes pressure testing and flushing of cross-site transfer lines.

WASTE VOLUME REDUCTION

(10) Currently inoperative.

(11) Currently operative. The 242-A Evaporator-Crystallizer was started up March 1977, and shut down April 1989 because of regulatory issues, and remained shut down for subsequent upgrading. This evaporator operates under a vacuum, employing evaporative concentration with subsequent crystallization and precipitation of salt crystals (forming saltcake). The evaporator was restarted on April 15, 1994.

TABLE F-2. SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANKS

SUMMARY OF WASTE TRANSACTIONS IN THE DOUBLE-SHELL TANK (DST) SYSTEM FOR APRIL 1999:
ALL VOLUMES IN KGALS

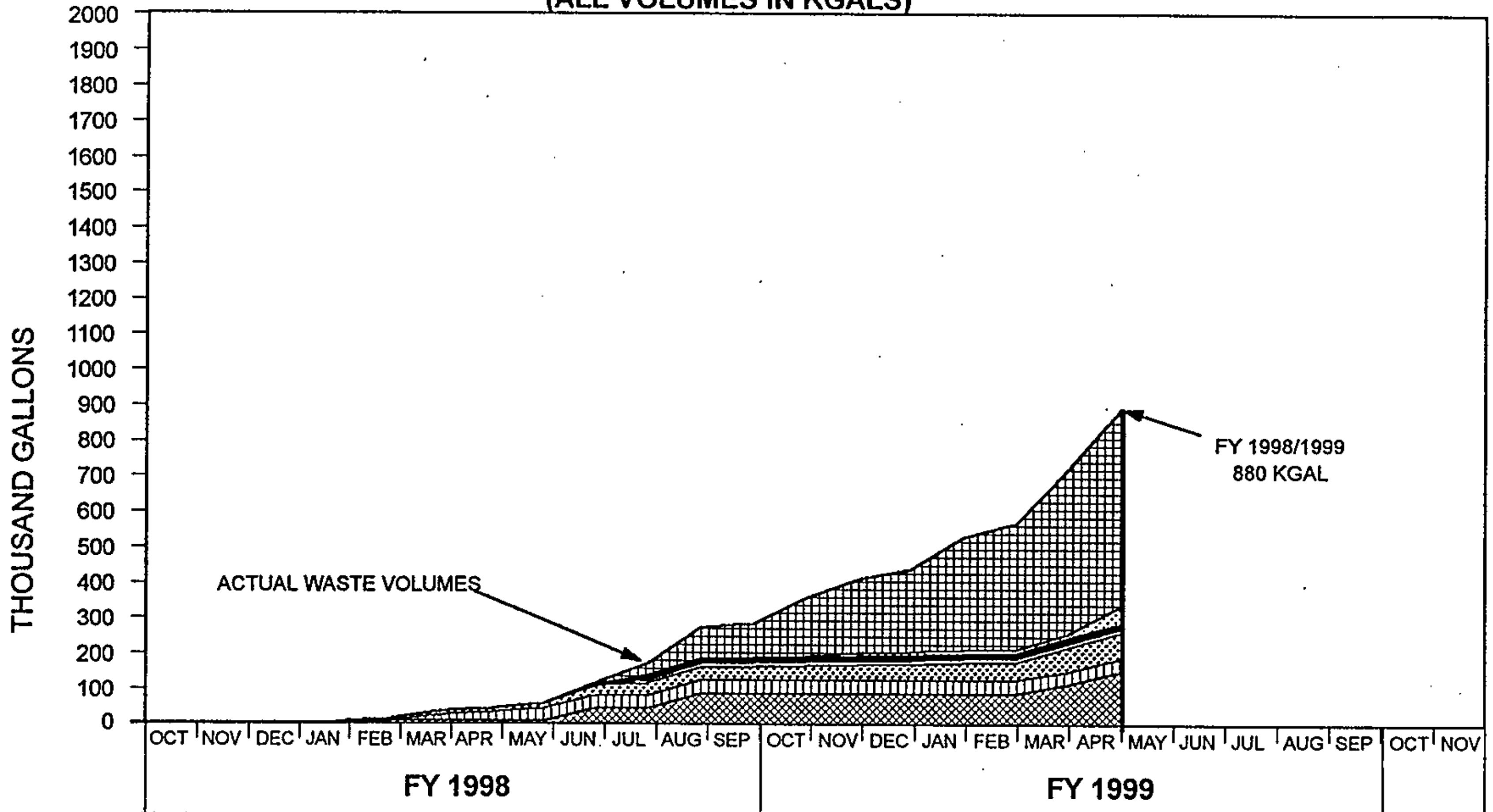
- The DST system received waste transfers/additions from SST Stabilization and Tank Farms in April.
- There was a net change of +173 Kgals in the DST system for April 1999.
- The total DST inventory as of April 30, 1999 was 19,203 Kgals.
- There was no Saltwell Liquid (SWL) pumped to the East Area DSTs in April.
- There was ~89 Kgals of Saltwell Liquid (SWL) pumped to the West Area DSTs (102-SY) in April.
- The SWL numbers are preliminary and are subject to change once cognizant Engineers do a validation.
- ~491 Kgals of Tank 102-SY was transferred to Tank 107-AP in March (cross-site transfer). This brings the total volume of waste cross-sited this year to 632 Kgals.
- Tank 102-AY received ~27 Kgals of solids from Tank 106-C in April. This brings the total solids transferred from Tank 106-C to ~101 Kgals.
- The volume of solids transferred from Tank 106-C to Tank 102-AY are preliminary and will be adjusted once settling and engineering evaluations are completed.

APRIL 1999 DST WASTE RECEIPTS					
FACILITY GENERATIONS		OTHER GAINS ASSOCIATED WITH		OTHER LOSSES ASSOCIATED WITH	
SWL (West)	+89 Kgal (2SY)	SLURRY	+4 Kgal	SLURRY	-2 Kgal
Tank Farms	+4 Kgal (2AY, 1AN, 5AN)	CONDENSATE	+6 Kgal	CONDENSATE	-3 Kgal
X-Site (Flush)	+36 Kgal (7AP, 2SY)	INSTRUMENTATION	+0 Kgal	INSTRUMENTATION	-0 Kgal
106-C Solids	+27 Kgal (2AY)	UNKNOWN	+0 Kgal	UNKNOWN	-0 Kgal
106-C Supernate	+12 Kgal (2AY)	TOTAL	+10 Kgal	TOTAL	-5 Kgal
TOTAL	+168 Kgal				

	ACTUAL DST WASTE RECEIPTS	PROJECTED DST WASTE RECEIPTS	MISC. DST CHANGES (+/-)	WVR	NET DST CHANGE	TOTAL DST VOLUME
OCT98	73	81	4	0	77	18675
NOV98	52	115	17	0	69	18744
DEC98	26	57	-20	0	6	18750
JAN99	89	122	5	0	94	18844
FEB99	40	74	3	0	43	18887
MAR99	151	135	-8	0	143	19030
APR99	168	128	5	0	173	19203
MAY99		154		0		
JUN99		-686		0		
JUL99		177		0		
AUG99		127		0		
SEP99		149		0		

NOTE: The "PROJECTED DST WASTE RECEIPTS" numbers were updated in December 1998. The Evaporator campaign was rescheduled to June in April 1999

COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES
(ALL VOLUMES IN KGALS)



	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
SWL WEST	0	0	0	0	0	0	0	0	7	28	53	9	69	42	22	84	40	108	89							
SWL EAST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
100 AREA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
PFP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
106-C	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	39							
3/400 AREA	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0							
S PLANT	0	0	0	0	0	0	0	0	3	3	4	1	0	0	0	0	0	1	0							
T PLANT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
TANK FARMS	0	0	0	4	2	4	1	3	14	10	0	1	4	1	2	5	0	16	4							
B PLANT	0	0	0	0	0	18	8	11	0	0	0	0	0	0	0	0	0	0	0							
PUREX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
OTHER	0	0	0	0	5	0	0	0	35	0	44	0	0	0	0	0	0	26	36							

NOTE: The Other Category is for Waste Generations from, Evaporator Tranining, Pressure Tests, Cross-Site Transfers

FACILPAC

FIGURE F-1. COMPARISON OF WASTE VOLUME GENERATIONS FOR HANFORD FACILITIES
(All volumes in Kgals)

This page intentionally left blank

APPENDIX G

MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

TABLE G-1. EAST AND WEST AREA MISCELLANEOUS UNDERGROUND STORAGE TANKS AND SPECIAL SURVEILLANCE FACILITIES

ACTIVE - still running transfers through the associated diversion boxes or pipeline encasements

April 30, 1999

FACILITY	LOCATION	PURPOSE (receives waste from:)	(Gallons)	MONITORED BY	REMARKS
EAST AREA					
241-A-302-A	A Farm	A-151 DB	953	SACS/ENRAF/Manually	Foamed over Catch Tank pump pit & div. box to prevent intrusion
241-ER-311	B Plant	ER-151, ER-152 DB	7381	SACS/FIC/Manually	Rain
241-AX-152	AX Farm	AX-152 DB	0	SACS/MT	Pumped 11/98
241-AZ-151	AZ Farm	AZ-702 condensate	3444	SACS/FIC/Manually	Volume changes daily - pumped to AZ-102 as needed
241-AZ-154	AZ Farm		25	SACS/MT	
244-BX-TK/SMP	BX Complex	DCRT - Receives from several farms	25170	SACS/MT	Using Manual Tape for tank/sump, will be pumped 5/21/99
244-A-TK/SMP	A Complex	DCRT - Receives from several farms	2721	MCS/SACS/WTF	WTF- pumped 3/99 to AP-108
A-350	A Farm	Collects drainage	303	MCS/SACS/WTF	WTF (uncorrected) pumped as needed
AR-204	AY Farm	RR Cars during transfer to rec. tanks	375	DIP TUBE	Alarms on SACS
A-417	A Farm		12051	SACS/WTF	WTF (uncorrected) pumped 4/98
CR-003-TK/SUMP	C Farm	DCRT	3843	MT/ZIP CORD	Zip cord in sump O/S 3/11/96, water intrusion, 1/98
WEST AREA					
241-TX-302-C	TX Farm	TX-154 DB	184	SACS/ENRAF/Manually	
241-U-301-B	U Farm	U-151, U-152, U-153, U-252 DB	8105	SACS/ENRAF/Manually	Returned to service 12/30/93
241-UX-302-A	U Plant	UX-154 DB	2255	SACS/ENRAF/Manually	
241-S-304	S Farm	S-151 DB	130	SACS/ENRAF/Manually	Replaced S-302-A, 10/91; ENRAF installed 7/98 Sump not alarming.
244-S-TK/SMP	S Farm	DCRT - Receives from several farms	35791	SACS/Manually	WTF (uncorrected)
244-TX-TK/SMP	TX Farm	DCRT - Receives from several farms	9719	SACS/Manually	MT
Vent Station Catch Tank		Cross Country Transfer Line	339	SACS/Manually	MT

Total Active Facilities 18

LEGEND:
- DB - Diversion Box
- DCRT - Double-Contained Receiver Tank
- TK - Tank
- SMP - Sump
- FIC - Food Instrument Corporation measurement device
- RS - Robert Shaw Instrument measurement device
- MFIC - Manual FIC
- MT - Manual Tape
- CWF - Weight Factor/SpG = Corrected Weight Factor
- SACS - Surveillance Automated Control System
- MCS - Monitor and Control System
- O/S - Out of Service
- ENRAF - Surface Level Measuring Device

TABLE G-2. EAST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

April 30, 1999

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	MONITORED BY	REMARKS
216-BY-201	BY Farm	TBP Waste Line	Unknown	NM	(216-BY)
241-A-302-B	A Farm	A-152 DB	5681	SACS/MT	Isolated 1985, Project B-138 Interim Stabilized 1990, Rain intrusion
241-AX-151	N of PUREX	PUREX	Unknown	NM	Isolated 1985
241-B-301-B	B Farm	B-151, B-152, B-153, B-252 DB	22250	NM	Isolated 1985 (1)
241-B-302-B	B Farm	B-154 DB	4930	NM	Isolated 1985 (1)
241-BX-302-A	BX Farm	BR-152, BX-153, BXR-152, BYR-152 DB	840	NM	Isolated 1985 (1)
241-BX-302-B	BX Farm	BX-154 DB	1040	NM	Isolated 1985 (1)
241-BX-302-C	BX Farm	BX-155 DB	870	NM	Isolated 1985 (1)
241-C-301-C	C Farm	C-151, C-152, C-153, C-252 DB	10470	NM	Isolated 1985 (1)
241-CX-70	Hot Semi-	Transfer lines	Unknown	NM	Isolated, Decommission Project,
241-CX-72	Works	Transfer lines	650	NM	See Dwg H-2-95-501, 2/5/87
241-ER-311A	SW B Plant	ER-151 DB	Unknown	NM	Isolated
244-AR VAULT	A Complex	Between farms & B-Plant	Unknown	NM	Not actively being used. Systems activated for final clean-out.
244-BXR-TK/SMP-001	BX Farm	Transfer lines	7200	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-002	BX Farm	Transfer lines	2180	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-003	BX Farm	Transfer lines	1810	NM	Interim Stabilization 1985 (1)
244-BXR-TK/SMP-011	BX Farm	Transfer lines	7100	NM	Interim Stabilization 1985 (1)
361-B-TANK	B Plant	Drainage from B-Plant	Unknown	NM	Interim Stabilization 1985 (1)

Total East Area inactive facilities 18

LEGEND:
- DB - Diversion Box
- DCRT - Double-Contained Receiver Tank
- MT - Manual Tape
- SACS - Surveillance Automated Control System
- TK - Tank
- SMP - Sump
- R - Usually denotes replacement
- NM - Not Monitored

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

TABLE G-3. WEST AREA INACTIVE MISC. UNDERGROUND STORAGE TANKS AND SPECIAL SURV. FACILITIES

INACTIVE - no longer receiving waste transfers

April 30, 199

FACILITY	LOCATION	RECEIVED WASTE FROM:	(Gallons)	MONITORED BY	REMARKS
216-TY-201	E. of TY Farm	Supernate from T-112	Unknown	NM	Isolated
231-W-151-001	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
231-W-151-002	N. of Z Plant	231-Z Floor drains	Unknown	NM	Inactive, last data 1974
240-S-302	S Farm	240-S-151 DB	8491	SACS/ENRAF	Assumed Leaker EPDA 85-04
241-S-302-A	S Farm	241-S-151 DB	0	SACS/FIC *	Assumed Leaker TF-EFS-90-042
			* FIC in Intrusion mode		Partially filled with grout 2/91, determined still assumed leaker after leak test
241-S-302-B	S Farm	S Encasements	Unknown	NM	Isolated 1985 (1)
241-SX-302	SX Farm	SX-151 DB, 151 TB	Unknown	NM	Isolated 1987
241-SX-304	SX Farm	SX-152 Transfer Box, SX-151 DB	Unknown	NM	Isolated 1985 (1)
241-T-301	T Farm	DB T-151, -151, -153, -252	Unknown	NM	Isolated 1985 (241-T-301B)
241-TX-302	TX Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TX-302-X-B	TX Farm	TX Encasements	Unknown	NM	Isolated 1985 (1)
241-TX-302-B	TX Farm	TX-155 DB	1600	SACS/MT	New MT installed 7/16/93
241-TX-302B(R)	E. of TX Farm	TX-155 DB	Unknown	NM	Isolated
241-TY-302-A	TY Farm	TX-153 DB	Unknown	NM	Isolated 1985 (1)
241-TY-302-B	TY Farm	TY Encasements	Unknown	NM	Isolated 1985 (1)
241-Z-8	E. of Z Plant	Recuplex waste	Unknown	NM	Isolated, 1974, 1975
242-T-135	T Evaporator	T Evaporator	Unknown	NM	Isolated
242-TA-R1	T Evaporator	Z Plant waste	Unknown	NM	Isolated
243-S-TK-1	N. of S Farm	Pers. Decon. Facility	Unknown	NM	Isolated
244-U-TK/SMP	U Farm	DCRT - Receives from several farms	Unknown	NM	Not yet in use
244-TXR VAULT	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-001	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-002	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
244-TXR-TK/SMP-003	TX Farm	Transfer lines	Unknown	NM	Interim Stabilized, MT removed 1984 (1)
270-W	SE of U Plant	Condensate from U-221	Unknown	NM	Isolated 1970
361-T-TANK	T Plant	Drainage from T-Plant	Unknown	NM	Isolated 1985 (1)
361-U-TANK	U Plant	Drainage from U-Plant	Unknown	NM	Interim Stabilzed, MT removed 1984 (1)

Total West Area inactive facilities 27

LEGEND:
- DB - Diversion Box, TB - Transfer Box
- DCRT - Double-Contained Receiver Tank
- TK - Tank
- SMP - Sump
- R - Usually denotes replacement
- FIC - Surface Level Monitoring Device
- MT - Manual Tape
- O/S - Out of Service
- SACS - Surveillance Automated Control System
- NM - Not Monitored
- ENRAF - Surface Level Monitoring Device

(1) SOURCE: WASTE STORAGE TANK STATUS & LEAK DETECTION CRITERIA document

APPENDIX H

LEAK VOLUME ESTIMATES

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES (Sheet 1 of 5)
April 30, 1999

Tank Number		Date Declared Confirmed or Assumed Leaker (3)	Volume Gallons (2)(4)	Associated KiloCuries 137 cs (10)	Interim Stabilized Date (12)	Leak Estimate Updated	Leak Estimate Reference
241-A-103		1987	5500 (9)		06/88	1987	(j)
241-A-104		1975	500 to 2500	0.8 to 1.8 (q)	09/78	1983	(a)(q)
241-A-105	(1)	1963	10000 to 277000	85 to 760 (b)	07/79	1991	(b)(c)
241-AX-102		1988	3000 (9)		09/88	1989	(h)
241-AX-104		1977	-- (7)		08/81	1989	(g)
241-B-101		1974	-- (7)		03/81	1989	(g)
241-B-103		1978	-- (7)		02/85	1989	(g)
241-B-105		1978	-- (7)		12/84	1989	(g)
241-B-107		1980	8000 (9)		03/85	1986	(d)(f)
241-B-110		1981	10000 (9)		03/85	1986	(d)
241-B-111		1978	-- (7)		06/85	1989	(g)
241-B-112		1978	2000		05/85	1989	(g)
241-B-201		1980	1200 (9)		08/81	1984	(e)(f)
241-B-203		1983	300 (9)		06/84	1986	(d)
241-B-204		1984	400 (9)		06/84	1989	(g)
241-BX-101		1972	-- (7)		09/78	1989	(g)
241-BX-102		1971	70000	50 (l)	11/78	1986	(d)
241-BX-108		1974	2500	0.5 (l)	07/79	1986	(d)
241-BX-110		1976	-- (7)		08/85	1989	(g)
241-BX-111		1984 (14)	-- (7)		03/95	1993	(g)(r)
241-BY-103		1973	<5000		11/97	1983	(a)
241-BY-105		1984	-- (7)		N/A	1989	(g)
241-BY-106		1984	-- (7)		N/A	1989	(g)
241-BY-107		1984	15100 (9)		07/79	1989	(g)
241-BY-108		1972	<5000		02/85	1983	(a)
241-C-101		1980	20000 (9)(11)		11/83	1986	(d)
241-C-110		1984	2000		05/95	1989	(g)
241-C-111		1968	5500 (9)		03/84	1989	(g)
241-C-201	(5)	1988	550		03/82	1987	(i)
241-C-202	(5)	1988	450		08/81	1987	(i)
241-C-203		1984	400 (9)		03/82	1986	(d)
241-C-204	(5)	1988	350		09/82	1987	(i)
241-S-104		1968	24000 (9)		12/84	1989	(g)
241-SX-104		1988	6000 (9)		N/A	1988	(k)
241-SX-107		1964	<5000		10/79	1983	(a)
241-SX-108	(6)(15)	1962	2400 to 35000	17 to 140 (m)(q)(u)	08/79	1991	(m)(q)(u)
241-SX-109	(6)(15)	1965	<10000	<40 (n)(u)	05/81	1992	(n)(u)
241-SX-110		1976	5500 (9)		08/79	1989	(g)
241-SX-111	(15)	1974	500 to 2000	0.6 to 2.4 (l)(q)(u)	07/79	1986	(d)(q)(u)
241-SX-112	(15)	1969	30000	40 (l)(u)	07/79	1986	(d)(u)
241-SX-113		1962	15000	8 (l)	11/78	1986	(d)
241-SX-114		1972	-- (7)		07/79	1989	(g)
241-SX-115		1965	50000	21 (o)	09/78	1992	(o)
241-T-101		1992	7500 (9)		04/93	1992	(p)
241-T-103		1974	<1000 (9)		11/83	1989	(g)
241-T-106		1973	115000 (9)	40 (l)	08/81	1986	(d)
241-T-107		1984	-- (7)		05/96	1989	(g)
241-T-108		1974	<1000 (9)		11/78	1980	(f)
241-T-109		1974	<1000 (9)		12/84	1989	(g)
241-T-111		1979, 1994 (13)	<1000 (9)		02/95	1994	(f)(t)
241-TX-105		1977	-- (7)		04/83	1989	(g)
241-TX-107	(6)	1984	2500		10/79	1986	(d)
241-TX-110		1977	-- (7)		04/83	1989	(g)
241-TX-113		1974	-- (7)		04/83	1989	(g)
241-TX-114		1974	-- (7)		04/83	1989	(g)
241-TX-115		1977	-- (7)		09/83	1989	(g)
241-TX-116		1977	-- (7)		04/83	1989	(g)
241-TX-117		1977	-- (7)		03/83	1989	(g)
241-TY-101		1973	<1000 (9)		04/83	1980	(f)
241-TY-103		1973	3000	0.7 (l)	02/83	1986	(d)
241-TY-104		1981	1400 (9)		11/83	1986	(d)
241-TY-105		1960	35000	4 (l)	02/83	1986	(d)
241-TY-106		1959	20000	2 (l)	11/78	1986	(d)
241-U-101		1959	30000	20 (l)	09/79	1986	(d)
241-U-104		1961	55000	0.09 (l)	10/78	1986	(d)
241-U-110		1975	5000 to 8100 (9)	0.05 (q)	12/84	1986	(d)(q)
241-U-112		1980	8500 (9)		09/79	1986	(d)
67 Tanks			<750,000 - 1,050,000 (8)				

N/A = not applicable (not yet interim stabilized)

TABLE H-1. SINGLE-SHELL LEAK VOLUME ESTIMATES
(Sheet 2 of 5)

Footnotes:

(1) Current estimates [see reference(b)] are that 610 Kgallons of cooling water was added to Tank 241-A-105 from November 1970 to December 1978 to aid in evaporative cooling. In accordance with Dangerous Waste Regulations [Washington Administrative Code 173-303-070 (2)(a)(ii), as amended, Washington State Department of Ecology, 1990, Olympia, Washington], any of this cooling water that has been added and subsequently leaked from the tank must be classified as a waste and should be included in the total leak volume. In August 1991, the leak volume estimate for this tank was updated in accordance with the WAC regulations. Previous estimates excluded the cooling water leaks from the total leak volume estimates because the waste content (concentration) in the cooling water which leaked should be much less than the original liquid waste in the tank (the sludge is relatively insoluble). The total leak volume estimate in this report (10 Kgallons to 277 Kgallons) is based on the following (see References):

1. Reference (b) contains an estimate of 5 Kgallons to 15 Kgallons for the initial leak prior to August 1968.

2. Reference (b) contains an estimate of 5 Kgallons to 30 Kgallons for the leak while the tank was being sluiced from August 1968 to November 1970.

3. Reference (b) contains an estimate of 610 Kgallons of cooling water added to the tank from November 1970 to December 1978 but it was estimated that the leakage was small during this period. This reference contains the statement "Sufficient heat was generated in the tank to evaporate most, and perhaps nearly all, of this water." This results in a low estimate of zero gallons leakage from November 1970 to December 1978.

4. Reference (c) contains an estimate the 378 to 410 Kgallons evaporated out of the tank from November 1970 to December 1978. Subtracting the minimum evaporation estimate from the cooling water added estimate provides a range from 0 to 232 Kgallons of cooling water leakage from November 1970 to December 1978.

	Low Estimate	High Estimate
Prior to August 1968	5,000	15,000
August 1968 to November 1970	5,000	30,000
November 1970 to December 1978	0	232,000
Totals	10,000	277,000

(2) These leak volume estimates do not include (with some exceptions), such things as: (a) cooling/raw water leaks, (b) intrusions (rain infiltration) and subsequent leaks, (c) leaks inside the tank farm but not through the tank liner (surface leaks, pipeline leaks, leaks at the joint for the overflow or fill lines, etc.), and (d) leaks from catch tanks, diversion boxes, encasements, etc.

(3) In many cases, a leak was suspected long before it was identified or confirmed. For example, reference (d) shows that Tank 241-U-104 was suspected of leaking in 1956. The leak was "confirmed" in 1961. This report lists the "assumed leaker" date of 1961. Using present standards, Tank 241-U-104 would have been declared an assumed leaker in 1956. In 1984, the criteria designations of "suspected leaker," "questionable integrity," "confirmed leaker," "declared leaker," "borderline" and "dormant," were merged into one category now reported as "assumed leaker." See reference (f) for explanation of when, how long, and how fast some of the tanks leaked. It is highly likely that there have been undetected leaks from single-shell tanks because of the nature of their design and instrumentation.

(4) There has been an effort in the past few years to re-evaluate these leak volume estimates; however, the activity is not currently funded.

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES

(Sheet 3 of 5)

(5) The leak volume estimate date for these tanks is before the "declared leaker" date because the tank was in a "suspected leaker" or "questionable integrity" status; however, a leak volume had been estimated prior to the tank being reclassified.

(6) The increasing radiation levels in drywells and laterals associated with these three tanks could be indicating continuing leak <u>or</u> movement of existing radionuclides in the soil. There is no conclusive way to confirm these observations.

(7) Methods were used to estimate the leak volumes from these 19 tanks based on the <u>assumption</u> that their cumulative leakage is approximately the same as for 18 of the 24 tanks identified in footnote (9). For more details see reference (g). The total leak volume estimate for these tanks is 150 Kgallons (rounded to the nearest Kgallons), for an average of approximately 8 Kgallons for each of 19 tanks.

(8) The total has been rounded to the nearest 50 Kgallons. Upper bound values were used in many cases in developing these estimates. It is likely that some of these tanks have not actually leaked.

(9) Leak volume estimate is based solely on observed liquid level decreases in these tanks. This is considered to be the most accurate method for estimating leak volumes.

(10) The curie content shown is as listed in the reference document and is <u>not</u> decayed to a consistent date: therefore, a cumulative total is inappropriate.

(11) Tank 241-C-101 experienced a liquid level decrease in the late 1960s and was taken out of service and pumped to a "minimum heel" in December 1969. In 1970, the tank was classified as a "questionable integrity" tank. Liquid level data show decreases in level throughout the 1970s and the tank was saltwell pumped during the 1970s, ending in April 1979. The tank was reclassified as a "confirmed leaker" in January 1980. See references (q) and (s); refer to reference (s) for information on the potential for there to have been leaks from <u>other</u> C-farm tanks (specifically, C-102, C-103, and C-109).

(12) These dates indicate when the tanks were declared to be interim stabilized. In some cases, the official interim stabilization documents were issued at a later date. Also, in some cases, the field work associated with interim stabilization was completed at an earlier date.

(13) Tank T-111 was declared an assumed re-leaker on February 28, 1994, due to a decreasing trend in surface level measurement. This tank was pumped, and interim stabilization completed on February 22, 1995.

(14) Tank BX-111 was declared an assumed re-leaker in April 1993. Preparations for pumping were delayed, following an administrative hold placed on all tank farm operations in August 1993. Pumping resumed and the tank was declared interim stabilized on March 15, 1995.

(15) The leak volume and curie release estimates on SX-108, SX-109, SX-111, and SX-112 have been re-evaluated using a Historical Leak Model [see reference (u)]. In general, the model estimates are much higher than the values listed in the table, both for volume and curies released. The values listed in the table do not reflect this revised estimate because, "In particular, it is worth emphasizing that this report was never meant to be a definitive update for the leak baseline at the Hanford Site. It was rather meant to be an attempt to view the issue of leak inventories with a new and different methodology." (This quote is from the first page of the referenced report). Therefore, an uncertainty analysis to determine the applicability of this methodology is currently in progress.

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 4 of 5)

References:

(a) Murthy, K.S., et al, June 1983, *Assessment of Single-Shell Tank Residual Liquid Issues at Hanford Site, Washington*, PNL-4688, Pacific Northwest Laboratory, Richland, Washington.

(b) WHC, 1991a, *Tank 241-A-105 Leak Assessment*, WHC-MR-0264, Westinghouse Hanford Company, Richland, Washington.

(c) WHC, 1991b, *Tank 241-A-105 Evaporation Estimate 1970 Through 1978*, WHC-EP-0410, Westinghouse Hanford Company, Richland, Washington.

(d) Smith, D. A., January 1986, *Single-Shell Tank Isolation Safety Analysis Report*, SD-WM-SAR-006, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

(e) McCann, D. C., and T. S. Vail, September 1984, *Waste Status Summary*, RHO-RE-SR-14, Rockwell Hanford Operations, Richland, Washington.

(f) Catlin, R. J., March 1980, *Assessment of the Surveillance Program of the High-Level Waste Storage Tanks at Hanford*, Hanford Engineering Development Laboratory, Richland, Washington.

(g) Baumhardt, R. J., May 15, 1989, Letter to R. E. Gerton, U.S. Department of Energy-Richland Operations Office, *Single-Shell Tank Leak Volumes*, 8901832B R1, Westinghouse Hanford Company, Richland, Washington.

(h) WHC, 1990a, Occurrence Report, *Surface Level Measurement Decrease in Single-Shell Tank 241-AX-102*, WHC-UO-89-023-TF-05, Westinghouse Hanford Company, Richland, Washington.

(i) Groth, D. R., July 1, 1987, Internal Memorandum to R. J. Baumhardt, *Liquid Level Losses in Tanks 241-C-201, -202 and -204*, 65950-87-517, Westinghouse Hanford Company, Richland, Washington.

(j) Groth, D. R. and G. C. Owens, May 15, 1987, Internal Memorandum to J. H. Roecker, *Tank 103-A Integrity Evaluation*, Westinghouse Hanford Company, Richland, Washington.

(k) Campbell, G. D., July 8, 1988, Internal Memorandum to R. K. Welty, *Engineering Investigation: Interstitial Liquid Level Decrease in Tank 241-SX-104*, 13331-88-416, Westinghouse Hanford Company, Richland, Washington.

(l) ERDA, 1975, *Final Environmental Statement Waste Management Operations, Hanford Reservation, Richland, Washington*, ERDA-1538, 2 vols., U.S. Energy Research and Development Administration, Washington, D.C.

(m) WHC, 1992a, *Tank 241-SX-108 Leak Assessment*, WHC-MR-0300, Westinghouse Hanford Company, Richland, Washington.

(n) WHC, 1992b, *Tank 241-SX-109 Leak Assessment*, WHC-MR-0301, Westinghouse Hanford Company, Richland, Washington.

(o) WHC, 1992c, *Tank 241-SX-115 Leak Assessment*, WHC-MR-0302, Westinghouse Hanford Company, Richland, Washington.

TABLE H-1. SINGLE-SHELL TANK LEAK VOLUME ESTIMATES
(Sheet 5 of 5)

(p) WHC, 1992d, Occurrence Report, *Apparent Decrease in Liquid Level in Single Shell Underground Storage Tank 241-T-101, Leak Suspected; Investigation Continuing*, RL-WHC-TANKFARM-1992-0073, Westinghouse Hanford Company, Richland, Washington.

(q) WHC,1990b, *A History of the 200 Area Tank Farms*, WHC-MR-0132, Westinghouse Hanford Company, Richland, Washington.

(r) WHC, 1993, Occurrence Report, *Single-Shell Underground Waste Storage Tank 241-BX-111 Surface Level Decrease and Change From Steady State Condition*, RL-WHC-TANKFARM-1993-0035, Westinghouse Hanford Company, Richland, Washington.

(s) WHC, 1993a, *Assessment of Unsaturated Zone Radionuclide Contamination Around Single-Shell Tanks 241-C-105 and 241-C-106, WHC-SD-EN-TI-185*, REV OA, Westinghouse Hanford Company, Richland, Washington.

(t) WHC, 1994, Occurrence Report, *Apparent Liquid Level Decrease in Single Shell Underground Storage Tank 241-T-111; Declared an Assumed Re-Leaker*, RL-WHC-TANKFARM-1994-0009, Westinghouse Hanford Company, Richland, Washington.

(u) HNF, 1998, Agnew, S. F. and R. A. Corbin, August 1998, *Analysis of SX Farm Leak Histories - Historical Leak Model*, (HLM), HNF-3233, Rev. 0, Los Alamos National Laboratory, Los Alamos, New Mexico

APPENDIX I

INTERIM STABILIZATION STATUS
CONTROLLED, CLEAN, AND STABLE STATUS

TABLE I-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (Sheet 1 of 3)

April 30, 1999

Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method	Tank Number	Tank Integrity	Interim Stabil. Date (1)	Stabil. Method
A-101	SOUND	N/A		C-101	ASMD LKR	11/83	AR	T-108	ASMD LKR	11/78	AR
A-102	SOUND	08/89	SN	C-102	SOUND	09/95	JET	T-109	ASMD LKR	12/84	AR
A-103	ASMD LKR	06/88	AR	C-103	SOUND	N/A		T-110	SOUND	N/A	
A-104	ASMD LKR	09/78	AR	C-104	SOUND	09/89	SN	T-111	ASMD LKR	02/95	JET
A-105	ASMD LKR	07/79	AR	C-105	SOUND	10/95	AR	T-112	SOUND	03/81	AR(2)(3)
A-106	SOUND	08/82	AR	C-106	SOUND	N/A		T-201	SOUND	04/81	AR (3)
AX-101	SOUND	N/A		C-107	SOUND	09/85	JET	T-202	SOUND	08/81	AR
AX-102	ASMD LKR	09/88	SN	C-108	SOUND	03/84	AR	T-203	SOUND	04/81	AR
AX-103	SOUND	08/87	AR	C-109	SOUND	11/83	AR	T-204	SOUND	08/81	AR
AX-104	ASMD LKR	08/81	AR	C-110	ASMD LKR	05/95	JET	TX-101	SOUND	02/84	AR
B-101	ASMD IKR	03/81	SN	C-111	ASMD LKR	03/84	SN	TX-102	SOUND	04/83	JET
B-102	SOUND	08/85	SN	C-112	SOUND	09/90	AR	TX-103	SOUND	08/83	JET
B-103	ASMD IKR	02/85	SN	C-201	ASMD LKR	03/82	AR	TX-104	SOUND	09/79	SN
B-104	SOUND	06/85	SN	C-202	ASMD LKR	08/81	AR	TX-105	ASMD LKR	04/83	JET
B-105	ASMD IKR	12/84	AR	C-203	ASMD LKR	03/82	AR	TX-106	SOUND	06/83	JET
B-106	SOUND	03/85	SN	C-204	ASMD LKR	09/82	AR	TX-107	ASMD LKR	10/79	AR
B-107	ASMD LKR	03/85	SN	S-101	SOUND	N/A		TX-108	SOUND	03/83	JET
B-108	SOUND	05/85	SN	S-102	SOUND	N/A		TX-109	SOUND	04/83	JET
B-109	SOUND	04/85	SN	S-103	SOUND	N/A		TX-110	ASMD LKR	04/83	JET
B-110	ASMD LKR	12/84	AR(2)	S-104	ASMD LKR	12/84	AR	TX-111	SOUND	04/83	JET
B-111	ASMD LKR	06/85	SN(2)	S-105	SOUND	09/88	JET	TX-112	SOUND	04/83	JET
B-112	ASMD LKR	05/85	SN	S-106	SOUND	N/A		TX-113	ASMD LKR	04/83	JET
B-201	ASMD LKR	08/81	AR (3)	S-107	SOUND	N/A		TX-114	ASMD LKR	04/83	JET
B-202	SOUND	05/85	AR	S-108	SOUND	12/96	JET	TX-115	ASMD LKR	09/83	JET
B-203	ASMD LKR	06/84	AR	S-109	SOUND	N/A		TX-116	ASMD LKR	04/83	JET
B-204	ASMD LKR	06/84	AR	S-110	SOUND	01/97	JET	TX-117	ASMD LKR	03/83	JET
BX-101	ASMD LKR	09/78	AR	S-111	SOUND	N/A		TX-118	SOUND	04/83	JET
BX-102	ASMD LKR	11/78	AR	S-112	SOUND	N/A		TY-101	ASMD LKR	04/83	JET
BX-103	SOUND	11/83	AR(2)	SX-101	SOUND	N/A		TY-102	SOUND	09/79	AR
BX-104	SOUND	09/89	SN	SX-102	SOUND	N/A		TY-103	ASMD LKR	02/83	JET
BX-105	SOUND	03/81	SN	SX-103	SOUND	N/A		TY-104	ASMD LKR	11/83	AR
BX-106	SOUND	07/95	SN	SX-104	ASMD LKR	N/A		TY-105	ASMD LKR	02/83	JET
BX-107	SOUND	09/90	JET	SX-105	SOUND	N/A		TY-106	ASMD LKR	11/78	AR
BX-108	ASMD LKR	07/79	SN	SX-106	SOUND	N/A		U-101	ASMD LKR	09/79	AR
BX-109	SOUND	09/90	JET	SX-107	ASMD LKR	10/79	AR	U-102	SOUND	N/A	
BX-110	ASMD LKR	08/85	SN	SX-108	ASMD LKR	08/79	AR	U-103	SOUND	N/A	
BX-111	ASMD LKR	03/95	JET	SX-109	ASMD LKR	05/81	AR	U-104	ASMD LKR	10/78	AR
BX-112	SOUND	09/90	JET	SX-110	ASMD LKR	08/79	AR	U-105	SOUND	N/A	
BY-101	SOUND	05/84	JET	SX-111	ASMD LKR	07/79	SN	U-106	SOUND	N/A	
BY-102	SOUND	04/95	JET	SX-112	ASMD LKR	07/79	AR	U-107	SOUND	N/A	
BY-103	ASMD LKR	11/97	JET	SX-113	ASMD LKR	11/78	AR	U-108	SOUND	N/A	
BY-104	SOUND	01/85	JET	SX-114	ASMD LKR	07/79	AR	U-109	SOUND	N/A	
BY-105	ASMD LKR	N/A		SX-115	ASMD LKR	09/78	AR	U-110	ASMD LKR	12/84	AR(2)
BY-106	ASMD LKR	N/A		T-101	ASMD LKR	04/93	SN	U-111	SOUND	N/A	
BY-107	ASMD LKR	07/79	JET	T-102	SOUND	03/.81	AR(2)(3)	U-112	ASMD LKR	09/79	AR
BY-108	ASMD LKR	02/85	JET	T-103	ASMD LKR	11/83	AR	U-201	SOUND	08/79	AR
BY-109	SOUND	07/97	JET	T-104	SOUND	N/A		U-202	SOUND	08/79	SN
BY-110	SOUND	01/85	JET	T-105	SOUND	06/87	AR	U-203	SOUND	08/79	AR
BY-111	SOUND	01/85	JET	T-106	ASMD LKR	08/81	AR	U-204	SOUND	08/79	SN
BY-112	SOUND	06/84	JET	T-107	ASMD LKR	05/96	JET				

LEGEND:
- AR = Administratively interim stabilized
- JET = Saltwell jet pumped to remove drainable interstitial liquid
- SN = Supernate pumped (Non-Jet pumped)
- N/A = Not yet interim stabilized
- ASMD LKR = Assumed Leaker

Interim Stabilized Tanks	119
Not Yet Interim Stabilized	30
Total Single-Shell Tanks	149

TABLE I-1. SINGLE-SHELL TANKS INTERIM STABILIZATION STATUS (sheet 2 of 2)

Footnotes:

(1) These dates indicate when the tanks were actually interim stabilized. In some cases, the official interim stabilization documents were issued at a later date.

(2) Tanks B-110, B-111 and U-110 were reviewed for meeting current interim stabilization criteria requirements in 1995, and document WHC-SD-WM-ER-516, REV 0, dated October 1995, was issued. The report stated the tanks met current requirements. However, the analysis used 16% for a porosity calculation. Currently 21% is used. Based on the current 21% values the new DIL, DLR and PLR were calculated by using the 21/16 factor.

Although tanks BX-103, T-102 and T-112 met the interim stabilization criteria at the time they were stabilized, they no longer meet the supernatant criteria. The tanks were re-evaluated in 1996 and memo 9654456, J. H. Wicks to Dr. J. K. McClusky, DOE-RL, dated September 1996, was issued which recommended that no further pumping be performed on these tanks, based on an economic evaluation.

Tank B-202 was determined to no longer meet the current established criteria for 200-series tanks due to a steady increase in the surface level indicating an ongoing intrusion based on a comparison of in-tank videos and subsequent evaluation in March 1996.

(3) Original Interim Stabilization data are missing on four tanks: B-201, T-102, T-112, and T-201.

TABLE I-2. TRI-PARTY AGREEMENT SINGLE-SHELL TANK INTERIM STABILIZATION SCHEDULE

April 30, 1999

As part of the Controlled, Clean, and Stable mission, the Single-Shell Tank Interim Stabilization Project goal is to mitigate the risk to the environment from a leak release from aging SSTs, by removing as much of the drainable liquid as practical, for safe storage prior to full waste retrieval.

New TPA milestones were negotiated effective September 23, 1996, to allow greater flexibility in the sequencing of tanks, in light of the latest technical information regarding tank waste safety status and watch list concerns.

Milestone	Description	Due Date	Actual Date	Comments
M-41-20	Start Interim Stabilization of 4 Single-Shell Tanks	9/30/96	3/24/96	S-108, S-110, T-104, and T-107 started.
M-41-21	Start Interim Stabilization of 2 Single-Shell Tanks	5/31/97 (1)	5/12/97	BY-109 started 9/10/96; T-110 started 5/12/97
M-41-22	Start Interim Stabilization of 6 Single-Shell Tanks	9/30/97 (2)(4)		BY-103 started 9/29/97, SX-104 started 9/26/97
M-41-23	Start Interim Stabilization of 8 Single-Shell Tanks	3/31/98 (3)(4)		
M-41-24	Start Interim Stabilization of 9 Single-Shell Tanks	9/30/98 (4)		
M-41-25	Start Interim Stabilization of 3 Single-Shell Tanks	3/31/99 (4)		
M-41-26	Start Interim Stabilization of 2 Single-Shell Tanks	9/30/99 (4)		
M-41-27	Complete Saltwell Pumping of Single-Shell Tanks	9/30/00 (4)		
M-41-00	Complete Interim Stabilization of Single-Shell Tanks including Intrusion Prevention	9/30/00 (4)		

(1) On March 13, 1997, the Department of Ecology (Ecology) approved Change Control Form M-41-96-03, extending M-41-21 from March 31 to May 31, 1997.

(2) Change Control Form M-41-97-01 was sent to Ecology on June 27, 1997; Dispute Resolution invoked on July 16, 1997. This Change Request was denied by the Director of Ecology on February 10, 1998.

(3) Change Control Form M-41-97-02 was sent to Ecology on December 29, 1997. Dispute Resolution invoked on January 13, 1998. This Change Request was denied by the Director of Ecology on March 10, 1998.

(4) Path Forward Plan submitted to Ecology on April 15, 1998, projects completion date of September 30, 2004.

(5) On March 3, 1999, the Department of Energy and the Department of Ecology agreed upon a Consent Decree for pumping the remaining non-stabilized Single-Shell Tanks. This consent decree is currently in a 60-day public review period. Upon final acceptance, milestones will be established.

TABLE I-3. SINGLE-SHELL TANKS STABILIZATION STATUS SUMMARY

April 30, 1999

Partial Interim Isolated (PI)

EAST AREA

A-101
A-102

AX-101

BY-102
BY-103
BY-105
BY-106
BY-109

C-103
C-105
C-106

East Area	11

WEST AREA

S-101
S-102
S-103
S-106
S-107
S-108
S-109
S-110
S-111
S-112

SX-101
SX-102
SX-103
SX-104
SX-105
SX-106

T-101
T-104
T-107
T-110
T-111

U-102
U-103
U-105
U-106
U-107
U-108
U-109
U-110
U-111

West Area	29
Total	40

Intrusion Prevention Completed (IP)

EAST AREA

A-103
A-104
A-105
A-106

AX-102
AX-103
AX-104

B-FARM - 16 tanks
BX-FARM - 12 tanks

BY-101
BY-104
BY-107
BY-108
BY-110
BY-111
BY-112

C-101
C-102
C-104
C-107
C-108
C-109
C-110
C-111
C-112
C-201
C-202
C-203
C-204

East Area	55

WEST AREA

S-104
S-105

SX-107
SX-108
SX-109
SX-110
SX-111
SX-112
SX-113
SX-114
SX-115

T-102
T-103
T-105
T-106
T-108
T-109
T-112
T-201
T-202
T-203
T-204

TX-FARM - 18 tanks
TY-FARM - 6 tanks

U-101
U-104
U-112
U-102
U-202
U-203
U-204

West Area	53
Total	108

Controlled, Clean, and Stable (CCS)

EAST AREA

BX-FARM - 12 Tanks

East Area	12

WEST AREA

TX-FARM - 18 tanks
TY FARM - 6 tanks

West Area	24
Total	36

Note: CCS activities have been deferred until funding is available.

Interim Stabilized (IS)

EAST AREA

A-102
A-103
A-104
A-105
A-106

AX-102
AX-103
AX-104

B-FARM - 16 tanks
BX-FARM - 12 tanks

BY-101
BY-102
BY-103
BY-104
BY-107
BY-108
BY-109
BY-110
BY-111
BY-112

C-101
C-102
C-104
C-105
C-107
C-108
C-109
C-110
C-111
C-112
C-201
C-202
C-203
C-204

East Area	60

WEST AREA

S-104
S-105
S-108
S-110

SX-107
SX-108
SX-109
SX-110
SX-111
SX-112
SX-113
SX-114
SX-115

T-101
T-102
T-103
T-105
T-106
T-107
T-108
T-109
T-111
T-112
T-201
T-202
T-203
T-204

TX-FARM - 18 tanks
TY-FARM - 6 tanks

U-101
U-104
U-110
U-112
U-201
U-202
U-203
U-204

West Area	59
Total	119

This page intentionally left blank

APPENDIX J

CHARACTERIZATION SAFETY SCREENING STATUS

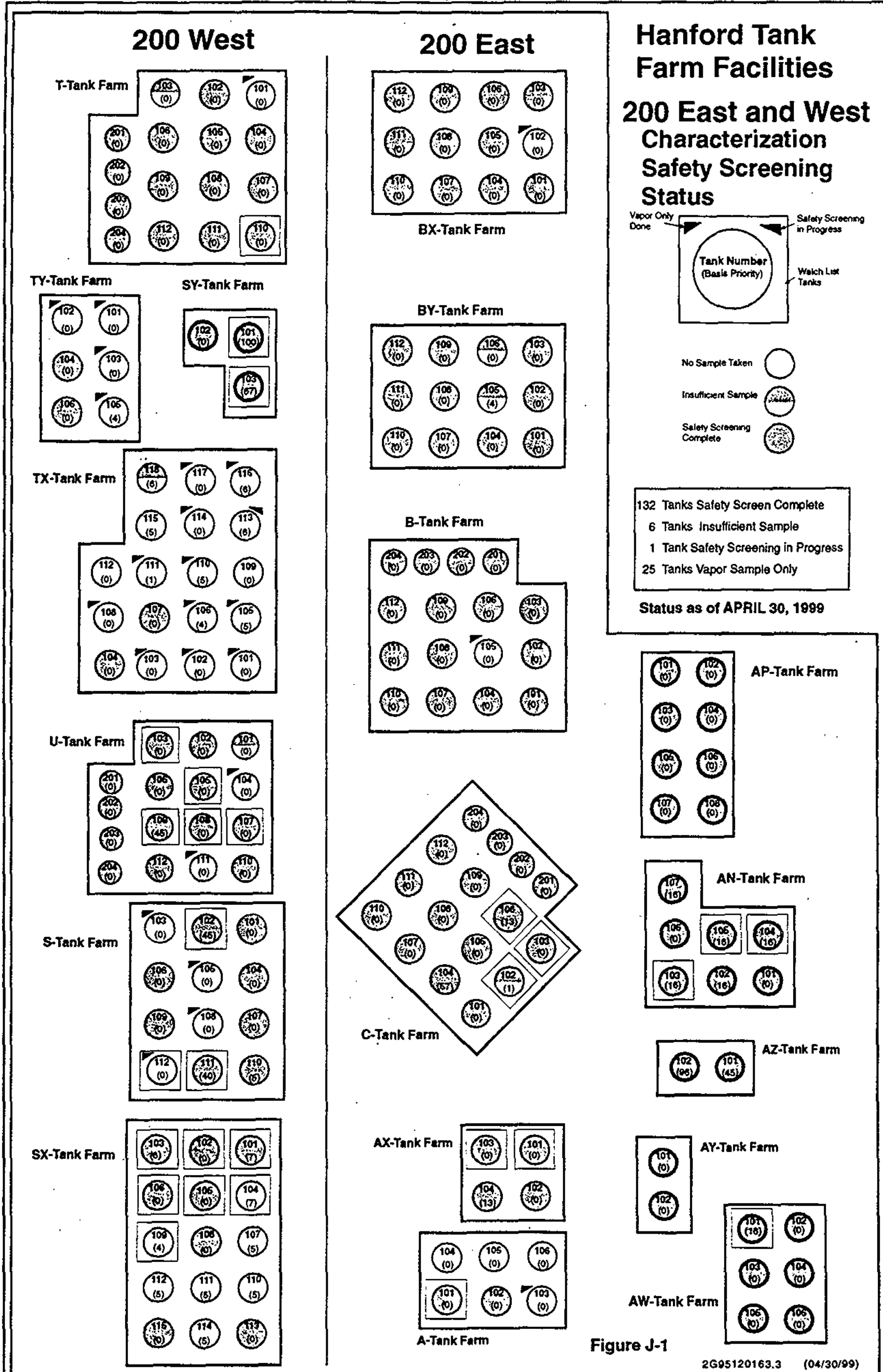


Figure J-1

2G95120163.3 (04/30/99)

FIGURE J-1. CHARACTERIZATION SAFETY SCREENING STATUS LEGEND

(Sheet 2 of 2)

April 30, 1999

200 East/West	The chart divides the two areas.
Tank Farms	Each tank farm is represented by a rough schematic of the tank layout and a heading naming the farm.
Circles	Tanks are depicted by a circle for single-shell tanks and a double circle for double-shell tanks.
Boxes	A thin line box around a tank inside a tank farm denotes "Watch List" status, in concurrence with Table A-1 of this document.
Numbers in Circles	The top number is the tank number. The number in parentheses is a weighted priority number, described in WHC-SD-WM-TA-164, "Tank Waste Characterization Basis." The numbers can be compared to each other to gain appreciation of relative priority: the higher the number, the greater the priority to sample and analyze.
Underlined Numbers	If a number in parenthesis is underlined, it is denoted as a "Characterization Basis Tank," as described in WHC-SD-WM-TA-164, "Tank Waste Characterization Basis." These are key tanks taken from the priority list that are of principal interest to the Characterization Program.
Circle Shading	The shading in the circle indicates the degree to which sampling and analysis are complete per requirements described in applicable Data Quality Objectives (DQOs). If blank, no characterization sampling has taken place. If fully shaded, the sampling and analysis are complete for each DQO applicable to that tank. Tanks in which characterization has begun but is not complete are designated by being half shaded.
Corner Triangles	Small triangles near a tank circle give further information on half-shaded tanks. Upper left corner triangles indicate that vapor samples have been taken from the tank. Lower left-hand corner triangles indicate that the tank has been sampled, analyzed, and a formal report has been written on the condensed phase sampling. Further status of the tank will be determined after review of the report is complete. Lower right-hand corner triangles indicate that some review has been completed and it has been determined that more sampling is needed to resolve the DQO requirements. Absence of triangles from a half shaded tank indicates recent condensed phase sampling.

This page intentionally left blank

DISTRIBUTION

Number of copies

OFFSITE - USA

2 **Congress of the United States**
U. S. Senate
717 Hart Senate Building
Washington D.C. 20510

Senator Ron Wyden

U. S. House of Representatives
1323 Longworth House Office Building
Washington D. C. 20515

Representative Richard "Doc" Hastings, 4th District

5 **U. S. Department of Energy-Headquarters**
1000 Independence Avenue, SW
Washington, D. C. 20585

H. Calley	EM-38	Cloverleaf Bldg.
Kurt Juroff	EM-38	Cloverleaf Bldg.
Kenneth Lang	EM-36	Cloverleaf Bldg.
William M. Levitan	EM-1	FORS/5A-014
Ralph Lightener	EM-38	Cloverleaf Bldg.

1 **U. S. Nuclear Regulatory Commission**
Division of Fuel Cycle, Safeguards & Security
Mail Stop T8-A33
Washington, DC 20555

Robert Pierson, Chief

2 **Washington State Department of Ecology**
Nuclear & Mixed Waste Management Program
P.O. Box 47600
Olympia, WA 98504-7600

Library

Nuclear Waste Program
300 Desmond Drive
Lacey, WA 98504

R. Stanley

1 **Washington State Department of Health**
Radiation Protection
7171 Cleanwater Lane
Box 47827
Olympia, WA 98504-7827

Ed Bricker

1 **Oregon State Department of Energy**
625 Marion St. NE
Salem, OR 97310

Dirk Dunning

1 **Oak Ridge National Laboratory**
P. O. Box 2008
Oak Ridge, TN 37831-6180

C. Forsberg MS-6180

1 **Los Alamos National Laboratory**
P. O. Box 1663
Los Alamos, NM 87545

Stephen Agnew
Group CST-4 MS-J-486

1 **Sandia National Laboratories**
1515 Eubank, NE
P. O. Box 5800
Albuquerque, NM 87185

Scott Slezak, Organization 2161 MS 0716

1 Donald T. Oakley
9612 Hall Road
Potomac, MD 20854

1 **Fluor Daniel, Inc.**
3353 Michelson Drive
Irvine, CA 92698

Charles Divona, MS-531G

1 **Foster-Miller, Inc.**
Power Systems Technology Group
350 Second Avenue
Waltham, MA 02451-1196

Maureen Williams

1 **National Research Council**
2101 Constitution Ave, N.W.
Washington D. C. 20418

Robert S. Andrews, Senior Staff Officer, MS HA456

1 **Government Accountability Project**
West Coast Office
1402 Third Avenue, Suite 1215
Seattle, WA 98101

Thomas E. Carpenter, Director

TRI-CITIES:

1	**Foster Wheeler Environmental Corp.** 3200 George Washington Way, Suite G Richland, WA 99352 R. J. Roberts	
1	**ARES Corporation** 636 Jadwin Ave., Suite B Richland, WA 99352	
1	**Babad Technical Services** 2540 Cordoba Court Richland, WA 99352	
1	**Vista Research, Inc.** 3000 George Washington Way, Suite 2C Richland, WA 99352 Phil Ohl	
1	**Wastren Inc.** 1050 Gilmore Ave, Suite C Richland, WA 99352 Gary Dunford	
1	**Department of Health** Richland Office 3011 W. Hood Ave Box 385 Kennewick, WA 99336 John Martell	
1	R. K. Welty 409 S. 41st Ave West Richland, WA 99353	

ONSITE

1	**Bechtel Hanford, Inc.**	
	J. P. Shearer	H0-20
1	**BAT**	
	R. T. Winward	A2-22
2	**MACTEC - Meier Associates, LLC**	
	J. D. Bingham	R2-11
	M. A.Kufahl	R2-11
2	**MACTEC - ERS**	
	J. F. Bertsch	B1-42
	R. G. McCain	B1-42

1	**MACTEC**	
	S. M. Blacker	R3-75
1	**General Accounting Office**	
	C. R. Abraham	A1-80
2	**Washington State Department of Ecology**	
	Tony Valero	B5-18
	Library	B5-18
1	**U. S. Environmental Protection Agency**	
	D. R. Sherwood	B5-01
17	**U. S. Department of Energy-Office of River Protection**	
	D. C. Bryson	S7-54
	J. M. Clark	S7-54
	J. J. Davis	A0-21
	R. L. Higgins	S7-53
	R. D. Hildebrand	H0-12
	D. H. Irby	S7-54
	J. E. Kinzer	S7-50
	C. Pacheco	S7-54
	T. E. Olds	A7-75
	S. H. Pfaff	S7-50
	M. L. Ramsey	S7-54
	G. W. Rosenwald	S7-54
	M. J. Royack	S7-54
	A. B. Sidpara	S7-53
	R. A. Stolberg	A4-81
	D. J. Williams	S7-41
	D. D. Wodrich	A0-21
	Reading Room	H2-53
5	**Pacific National Northwest Laboratories**	
	S. A. Bryan	P7-25
	R. E. Gephart	K9-76
	B. E. Opitz	K6-75
	R. D. Scheele	P7-25
	L. A. Smyser	A0-21
126	**Fluor Daniel, Inc., and Affiliated Companies**	
	D. I. Allen	R2-50
	J. J. Badden	S5-07
	D. G. Baide	S5-05
	D. B. Bechtold	T6-07
	L. Bedford	R2-84
	T. M. Blaak	S5-13
	H. L. Boston	R2-53
	V. C. Boyles	R2-11
	P. J. Brackenbury	R3-73
	C. B. Bryan	R2-58
	J. W. Cammann	R2-11
	K. G. Carothers	R2-11
	R. J. Cash	S7-73
	W. L. Cowley	R1-49

C. Defigh-Price		R2-12
D. K. DeFord		S7-24
M. P. Delozier		R2-58
M. L. Dexter	(10)	R1-51
W. T. Dixon		R3-01
R. A. Dodd		S5-07
J. G. Douglas		H3-26
A. C. Etheridge		H7-07
S. D. Estey		R2-11
K. D. Fowler		R2-11
G. T. Frater		K9-46
J. R. Freeman-Pollard		R2-89
L. A. Gaddis		H5-57
K. A. Gasper		A3-03
T. C. Geer		R1-43
M. S. Gerber		B3-30
B. C. Gooding		T4-01
M. D. Guthrie		S6-72
J. C. Guyette		S7-40
D. B. Hagmann		R2-89
B. K. Hampton		S7-40
B. M. Hanlon	(10)	T4-08
G. N. Hanson		S5-07
R. A. Harding		R1-56
W.M. Harty Jr.		S5-13
D.C. Hedengren		R2-11
B. A. Higley		R3-73
K. M. Hodgson		R2-11
T. M. Hohl		R3-73
J. L. Homan		R3-25
H. R. Hopkins		R2-58
S. E. Hulsey		R3-01
M. N. Islam		R1-43
O. M. Jaka		S5-34
P. Jennings		R2-84
R. D. Jensen		B3-53
J. R. Jewett		R3-73
B. A. Johnson		S5-03
G. D. Johnson		S7-73
T. E. Jones		H0-22
J. Kalia		R1-43
R. A. Kirkbride		R3-73
P. F. Kison		T4-07
N. W. Kirch		R2-11
J. S. Konyu		R4-04
J. G. Kristofzski		R2-58
M. J. Kupfer		R3-75
M. A. Lane		S2-47
M. D. LeClair		R3-75
J. A. Lechelt		R2-11
J. W. Lentsch		S5-07
G. T. MacLean		B4-48
D. J. McCain		R2-12
M. A. McLaughlin		H8-67
W. H. Meader		H8-66
J. M. Morris		R2-84
M. A. Payne		R2-58
R. E. Pohto		R2-84

R. L. Powers		S5-13
R. E. Raymond	(2)	G1-54
D. S. Rewinkel		S7-40
C. J. Rice		R2-50
W. E. Ross		S7-84
K. Sathyanarayana		H0-34
D. J. Saueressig		S8-05
J. S. Schofield		S7-12
R. E. Schreiber		B2-05
E. B. Schwenk, Jr.		L6-38
N. J. Scott-Proctor		S5-01
J. E. Shapley		B4-46
M. L. Sheriff		S5-07
D. H. Shuford		S7-03
E. R. Siciliano		B4-43
J. N. Strode		R2-11
R. R. Thompson		R2-12
A. M. Umek		S7-40
T. B. Veneziano		S7-40
D. T. Vladimiroff		S7-20
J. A. Voogd		R2-53
A. E. Young	(6)	R1-10
F. A. Zak		S7-34
Central Files		B1-07
200 West Shift Office		T4-00
200 East Shift Office		S5-04
Environmental Data Mgmt Center	(2)	H6-08
Unified Dose Assessment Center (UDAC)		A0-20
Document Processing Center		A3-94